

AMERICAN GAS ASSOCIATION MONTHLY



Vol. II

No. 8

August, 1920

It Is Time To Unshackle Industry

"We shackled, regulated, restrained, reprov'd and advised during the war and it was accepted as a war necessity, but now we are at peace, actual peace if not formal peace, and it is time to unshackle. We need vastly more freedom than we do regulation, and we need the restored freedom of business and men."

—SENATOR HARDING of Ohio—

From the April Issue of A. G. A. MONTHLY

C O N T E N T S

VOLUME II

AUGUST, 1920

NUMBER 8

	PAGE
Accounting Section	485
Advertising Section	493
Associations Affiliated with A. G. A.	484
Canadian Gas Association Note.....	483
Cement Joint Practice.....	514
Chemical Abstracts	515
Classified Directory—Manufacturers of Gas Equipment.....	523
Commercial Section	497
Commission Rules and Regulations on Main Extensions.....	516
Corner on Ideas	493
Editorials—Increased Rates	468
America First!	468
A Stitch in Time.....	468
Fair Play and Fair Pay.....	495
Gas Fuel Popular in Chicago Territory.....	503
Gas Publicity in the Magazines.....	494
Important Notice to Technical Section.....	509
Making Branch Connections from Cast Iron Mains.....	510
Manufacturers' Section	505
Modern Journals for Corporation Accounting.....	487
Neutralized Relief	480
Nine Months Growth	482
No Lost Motion at Southern Meeting.....	475
Our Gas Lighting Business.....	497
Photographs Needed for Magazine Publication.....	495
Preparing for the Convention.....	494
Public Utility Man Designs Office Device.....	486
Publicity's the Thing	505
Rate Increases Secured—List No. 36.....	519
Real Sales Talks in Industrial Fuel Papers.....	498
Recuperators and Regenerators	499
Research in Electrolysis	512
Senator Harding on the Utility Situation.....	469
Speed in Spite of Carbon Paper.....	490
Technical Section	509
The Exhibition	507
The Real Owners	480
Window Display Suggestions for August—A. G. A. Service No. 17.....	500
200 Strong	506

AUTHORS

Anderson, H. B.—Branch Connections from Cast Iron Mains.....	510
Harding, Senator W. G.—On the Public Utility Situation.....	469
Ulbricht, Emil—Modern Journals for Corporation Accounting.....	487

FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS
APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

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AMERICAN GAS ASSOCIATION MONTHLY

ADDRESS ALL COMMUNICATIONS TO THE
AMERICAN GAS ASSOCIATION, Inc.
130 E. 15th St., NEW YORK, N. Y.

Vol. II AUGUST, 1920 No. 8

Increased Rates

The time has come for a change in the Association's Constitution and By-Laws. We have been spreading broadcast the facts which make necessary a more liberal attitude toward gas companies, because their revenues have been inadequate to meet the increased costs of operation and to permit them to render good service. We are in the same boat. The proposed changes in our Constitution and By-Laws will, if approved, increase the base amount paid by all company members from \$10 to \$25 per year, and in the case of gas companies doing a gross annual business in excess of \$2,000,000, will make the payment on that excess amount one-thirtieth instead of one-fiftieth of 1%. About twelve companies will be affected by this latter provision. Finally it is proposed to discontinue the practice of supplying without charge the printed proceedings of the annual meeting, providing them in future only to those members who desire them and at the actual cost of printing.

The membership will be asked to vote by letter ballot on these changes, so that they may take effect at the end of the current fiscal year. They are made necessary by the very conditions that are forcing gas companies all over the country to appeal for increased rates. We think the justice of the case requires no further statement than that.

America First!

We can well understand that "American coal is necessary to the rehabilitation of war-ridden Europe." Without any sacrifice of idealism, however, the demand was voiced for a reduction in the quan-

tity of coal exported to foreign countries. The condition of demoralization, which exists in the coal supply in this country, is not due entirely to the export evil. That is merely one of several factors which influence it. But all these factors require consideration together, and a reduction in the quantity of coal being sent out of the country, if not a complete embargo on foreign shipments, is a proper and necessary demand, if the consequences which menace our people this winter are to be avoided. With this condition corrected, and the essential character of public utility service recognized by the Interstate Commerce Commission, in the form of a general order establishing priority in the assignment of cars to mines for public utility loading, something substantial will have been done to protect the interests of many millions of Americans who have already sacrificed much.

A Stitch in Time!

Several manufacturers of appliances have sent out timely warnings to their trade, urging the necessity of prompt placement of orders for fall delivery. The difficulties which have been, and continue to be experienced in securing deliveries of coal, oil and other supplies, should be warning to all of the transportation conditions which now prevail and apply alike to all classes of goods. Add to traffic disturbances and delays the generally unsettled conditions which affect the production of all classes of material at the present time, and the need of prudence and farsightedness in the early placing of orders is seen to be greater than ever before. The warning of one progressive and well-known manufacturer of gas appliances to avoid the possibility of "empty warehouses," contains no exaggeration. Shortsightedness in this essential particular may mean empty coal bins, empty oil tanks, and empty holders.

AMERICAN GAS ASSOCIATION MONTHLY

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No. 8

Views of U. S. Senator Warren G. Harding, Republican Nominee for the Presidency, on the Utility Situation

*An address delivered at the Mid-year Meeting of the American Railway Association,
Cleveland, Ohio, January 8th, 1920.*

THERE were great compensations in the world war. Finding ourselves, as an American people, was one. Discovering the American soul was another, and I tell you, my countrymen, no matter how unestimable the cost; no matter how extensive the sacrifice, it was worth everything it cost to find the soul and spirit of the American Republic. There were rewards of service, quite varied, some inadequate and some excessive. And I have no hesitancy in saying that America has not yet extended the reward it ought to extend to the men who offered their all on the altar of American patriotism. *There were also some very severe and wholly undeserved penalties on patriotic service during the war period, and which are still applied in its fevered aftermath. But I know of none worse*

penalized than the electric railway lines of the country.

We know they served with splendid zeal and sacrificing devotion. They were as necessary to the stupendous tasks of preparation for war as powder is to the loaded shell.

Transportation of workers was the key to intensified endeavor. We drew on their transportation energies and taxed their capacities, and criticised their insufficiencies, though no one foresaw, and none foreseeing could have prepared for, the strain which came upon them.

I encountered some of the reflected anxieties of the varied branches of government concerned in war preparation. The country little noted it, but the transportation of the workmen at home was no less important than transportation of

our men across the sea and on the field of conflict.

Public Attitude Towards Utilities

Let it be recorded that the electric railways responded with every ounce of energy, and played the big part of a big factor in doing big things for the nation. The natural inference was that they shared in the reward for service. They sustained the heavy burden, and not only have they had no reward, as was given so generously in many instances to big and little business, but were penalized worse than aliens suspected of aiding the enemy.

Perhaps the sentiment of the country against the street railways and the electric railway service, was not intended. I rather think it was unmindfulness. Maybe there was political play, local if not Federal, inspired by selfish aims. *It is a curious phase of human nature that the people in the populous centers hail transportation lines as the supreme blessing, encourage their construction and celebrate their completion, and then growl about them ever after.* Rarely does anybody utter appreciation, though genius and efficiency are nowhere more marked in good service, and no one seems to think of their essential character until traffic is suspended, and then watch the change in the atmospheric conditions!

It was this demand for uninterrupted service in spite of wage disputes that led the Federal Government to impose the supreme outrage of the war on those who struggled in highest fidelity. Let us assume it was unintentional, we know it was brutally inconsiderate. Let us not direct our criticism at the awards of the War Labor Board. That body yielded to the flood-tide of war demands which was irresistible. *The shocking thing was that the Federal Government with limitless assumption of power, should com-*

mand doubled expense accounts and remain deaf to all appeals for the means of meeting them.

It is all right to cry out against Bolshevik seizures in contempt of all property rights, but they had justifying example in the ruin of electric railway property by the War Administration in this country, which thought rightfully of the human forces employed in their operation, but ignored the rights to solvent existence of the properties they operated. Statutes may have been deficient, but the power to command expenditure implied the power to permit to earn, else it ought not to have been exercised, and it is the shame of the Republic that one was ordered and the other ignored.

Government Failed To Help

Let us not go back to the crimes of exploitation and frenzied finance. All that has been established and properly criticised, and fully condemned. Here was a five billion dollar public service enterprise, accommodating fifteen billions of passengers a year. Its continued operation was a necessity in peace or war, but vitally necessary to war production. Congress itself called for much expenditure for additional construction involving millions, notably in the congested centers of productivity in the East. *The Government fixed the cost of operation, fixed the price of supplies and maintenance, and prescribed the service to be performed. It exercised the power to increase burdens, but had no power, or having had it, no inclination, to help in meeting them.*

Sixty-two companies with six thousand miles of railway surrendered to receivership before the conscience of municipal authority awakened to the ruin wrought in neglected Federal fairness. A thousand miles were utterly abandoned, dismantled and junked. Perhaps some were the lines of dreams, for there are such

promoted for the profit of building, rather than builded for a profit in operation. Some were poor streaks over the right of way of hope. I know whereof I speak. In our newspaper office, in the fancied expansion of the city we were always boosting—we used to project an electric highway of commerce every Winter, and now and then one or two of them, and took up the ties in the good old Summertime. Nevertheless, one-sixth of all the lines in the country are abandoned or imperilled, and what greater proportion is hanging on with more courage than faith has not been revealed.

The blight was of Federal origin, while the municipality or community looked on in indifference, and that is scant tribute to its most intimate public service. Let us believe it to be a public sentiment resentful of abuses or blunted by wartime prejudices. Surely it was not the conscience of square dealing in America. In effecting the restoration we must wipe out the contributing causes, and make sure from this time on that honest investment in honest public service shall receive an honest return for that public service. The capital which seeks to render a necessary public service merits a square deal and it must have it.

Public Ownership Won't Do

I doubt the solution that lies in public ownership. *It is well established that public ownership merely ignores the pennies in the pocket of the people to draw the dollars from an impersonal public treasury. We are not yet ready for the deficits lines consolidated.*

Surely the American people will make—and is making—the coming readjustment. The government which tolerates its own ruin of business will soon come to paralysis.

Old-time values are out of harmony in a new era of money's changed meas-

urements. Stable financing, righteous earnings, and just returns must be based on a proper charge for a service rendered. Mr. Squire was talking about the three cent standard of fare. *The nickel is no longer the standard of riding value, because it passed as maximum when it ceased to be minimum, and lost its relationship when custom recut the luncheon pie.*

I believe in strictest regulation without conflicting authority because all public utilities must yield to the voice of public interest. *But the same power that protects the public must protect the public service, whether that servant is capital or the workman who operates the utility.*

Flexible Rates Necessary

Destroyed credits must be restored and flexible scales of charges must be provided, so that the public may pay justly for that which it demands. The exploitation of ten or twenty years ago justifies no failure in good faith to-day. The public which is served has an obligation no less than that of those who serve it.

If I have read aright full seventy-five per cent. of the cost of operation goes to wages. The men deserve to be well paid. I think it is fair to say that most of the increased awards the public has approved. But the public ought to pay precisely as it approves, because justice is not a favor to one, but it is the right of all involved. *Electric railway service is first of all essential to the great body of workers, and the one great agency of relieving congested centers.* There may come supercedure to the enterprises in which you are engaged, but transportation in some form must ever be provided.

That leads me to a digression from the line of thought I have been following. I venture to offer it here.

I have wondered sometimes that labor leadership, possessing unquestioned capacity and very great power, has not

turned to a really constructive plan of labor's very own, for capitalistic control of some of our most essential enterprises. It ought to be reasonably possible without turning to the public treasury, and without invoking class privilege. If it did nothing more than give to our labor forces the owner's viewpoint, it would at least contribute that much toward better understanding.

Labor's Capitalistic Power

Let us assume that the working forces in any particular industry believe in their control and wish for ownership. It is logically possible, by a perfectly lawful and a very practical method. For example, there are approximately three hundred thousand electric railway employees in the United States. I will assume that they are organized and have the machinery for collective undertakings. Suppose they contributed \$100 each in one year to a purchase fund. The first year they could put thirty millions cash into any system selected. In ten years, not counting a profit, they could invest three hundred millions cash, and under normal conditions, they would double the purchase, through legitimate bonding, and thus own one-ninth of all the lines in the United States. A very considerable acquirement for ten years, would it not be?

But we may venture into another field of service. The desire already has been expressed to operate and profit in operating the steam railroad lines. Two millions of men are banded together in federated railway unions. Let them assess themselves \$100 per annum and two hundred millions in cash are available the first year. In ten years of continued investment the sum reaches two billions, enough to own one-eighth of the railway transportation of the whole country. No small achievement for ten years, when capital has been three-

quarters of a century developing and constructing the entire American system.

But steam railway returns are not wholly certain. Let us turn the adventure into a really profitable field. Four hundred thousand bituminous coal miners were recently locked in conflict with the operators over wages and working conditions. Suppose the miners paid \$100 each per annum into a purchase fund. The first year's capital is forty millions. That will buy a good many profitable coal mines. We cannot assume the profit will be two thousand per cent. as was recently heralded in the hour of conflict. Perhaps they will buy mines only profiting ten per cent. The first year of ownership returns four millions to add to the second year's investment of another forty millions. Eighty-four millions invested in two years. Follow the ascending scale for a period of ten years, and the investment totals, out of \$100 per year per workman and the ten per cent. profit, the astounding figures of six hundred and fifty millions, a fairly considerable mining investment, which any organization of men might rejoice to own. It will buy half the bituminous mines in the country, and leave millions for a venture in anthracite besides.

All these are very possible. Labor has not reckoned its financial power, because it has concentrated on collective bargaining, and has overlooked collective ownership. I know it will be answered that the assessment proposed is impossible; that the pay envelope will not stand the strain. Very well, cut it in half, and the figures are still colossal. However, the \$100 does not equal the tithing of olden or modern times when applied to any group, and barring illness or adversity, it can be met with only moderate sacrifice and denial. These things, sacrifice and denial, mark the pathway of all great acquirement in this world. Thrift points

the way, denial strengthens resolution, and possession is the reward.

Need of More Capitalists

I do not know that such a constructive plan will always be successful. I doubt if it will be accepted, but the means are available in the fullness of employment; and if always successful, I do not know that it will abolish all conflict. But it will transform the so-called laboring classes to the capitalistic mass, and the very processes of attainment will add to the sturdiness of citizenship. In collective power it is as easy to own mines as it is to buy "flivvers," if only capable leadership is turned to constructive endeavor. But in any event, let us have the gospel preached, that *saving is safer and surer than seizure*.

This problem of labor's participation must have that riveted thought which will bring solution. It has the world on the anxious seat to-day. I do not fear a Russianized republic because this is intelligent, law-abiding America, where government is still too virile to be either cruel or craven, and if it is corrupt it ought to fail, and if craven will speedily fall.

A new order has dawned, and it is folly to ignore it. Its problems are pressing and they must be solved. If any portion of American citizens want to commune, with its corporations, let them have it under the law. If any body of men covet capitalistic possession, let them acquire it under the law. I have indicated the possibility. *If there must be industrial conflict, we must find a means of settlement under the law. It is a poor civilization which finds itself menaced by disputes and contrives no way for peaceful adjustment.* What avails it to seek a compact among nations to end international conflict, if we cannot make a league of citizenship to end industrial warfare at our very doors.

The swinging pendulum marks reversed conditions, and the cycles of changed relationships are ever recurring, but it matters not what influence is temporarily potent, it is as harmful to destroy capital as it is hateful to enslave labor. Both factors are necessary to the people's good fortune, and both must be safeguarded to maintain American eminence.

Management the Binding Force

Let me say in passing, that I said it the other evening, neither of them alone ever achieved a thing, and both of them together never wrought a success without calling in the third party whom you men here to-night represent; namely, genius and management, working with labor and capital in any given pursuit.

The Senate recently voted to prohibit the strike in the public transportation service, holding that the service of the people transcended any interest engaged therein. In the very same act, in highest consideration for every workman engaged in the service, it provided a responsible governmental tribunal to adjust all labor grievances and award full justice. The Lower House has not agreed, but it ought, and every American might well urge that agreement, because it safeguards the public and guarantees the workmen the fullness of his due, with a government seal on every sacred pledge, and if the government itself cannot bestow justice, there is not any human agency that will.

Let no man believe this to be an abridgment of his Constitutional liberty. No citizen will be denied the privilege of quitting his employment while freedom endures. It does not interfere with collective bargaining in the railway service, but provides a tribunal of adjustment, where collective negotiation fails. *It is one thing to quit a public service and quite another to combine to paralyze*

that service at measureless cost, discomfort and suffering to the public.

And let no other man construe this as an assault on unionism or collective bargaining in private enterprises and competitive pursuits. Unionism has proved its benefits, and unionism will abide. It is a necessary agency to rend the human selfishness which dates from old enslavement days, the same selfishness which yields to necessity where it ought to bestow for justice's sake.

Labor unionism, however, has a higher goal than mere swelling of pay envelope. Pyramided wages mean mounting cost of living, and nothing then avails from the increase of pay. The value of the medium of pay is lessened and there is bulk without abundance. The balance between the sum earned and the sum paid out to live is still the index of prosperity, and a competence is and will always be rated by its purchasing power.

Confessedly, it is difficult to get normal when the whole social and economic system is out of plumb, due to war's anxieties and excesses. The fever and fervor of the war time have impaired our capacity for consistency. We grieve about profiteering; yet we invite it by our extravagance. We solemnly protest the high cost of living and then cheerfully boost it higher by the indulgence of high living—much the highest of the high tides of inconsiderate expenditure. We protest about taxes, and then heedlessly demand new governmental functions, which send the high cost of government soaring still higher. In these days pennies are punk, nickels a nuisance, and fifty dollar bills have dropped into the contempt of familiarity, when a ten once reigned in supreme exclusiveness.

Luxuries Made Necessities

We make necessities of luxuries in the busy world, and mark you, spend more

*Extra copies of this address may be obtained
hundred.*

for movies than we do for education. We expended a billion dollars last year for our amusements, and drank seven million dollars worth of pop, nut sundaes, pineapple temptations, and other lawful and sugared concoctions; yet we complain that the sugar grower doesn't raise more cane. *We are exceeding the speed limit in this country in forty ways and ought to slow down to safety. It would be fine to get normal and sane without the pinch of necessity to restore dulled senses.*

This is not pessimism. The heart of the American people is right but we need to do some sober thinking. No extravagant nation ever maintained its health, strength or conscience. No extravagant nation ever endured since the world began. Extravagance of the people and extravagance of the government go hand in hand, until the burdens of taxes become a hindrance and oppression. It was simple living which made possible the miracle of American development and accomplishment, and simple living will lend to restoration out of war's ruin. There is no other way.

America has matters of vastly greater concern than its foreign relations. It little matters what we propose to covenant. The American conscience must be our guide and we shall discharge a great nation's obligations to humanity and civilization without meddling abroad or neglecting vital affairs at home. We seek no isolation, we avoid no responsibility, we dodge no duty. But with a fluxed civilization, our first concern is crystallization in conformity to American ideals and the supremacy of law, the reign of justice, and continued progress in our Republic, whose greatest influence in the world comes from the worth of a real American example.

from Association Headquarters at \$5.00 per

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

National Bureau of Standards (Advisory Committee)—O. H. FOGG, New York, N. Y.
Accident Prevention—JAMES B. DOUGLAS, Philadelphia, Pa.
Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
Chamber of Commerce, Membership in—CAPT. WM. E. MCKAY, Boston, Mass.
Calorific Standards—J. B. KLUMPP, Philadelphia, Pa.
Central Development and Testing Laboratory—W. H. GARTLEY, Philadelphia, Pa.
Co-operation With Educational Institutions—C. A. MURROE
Educational—WALTON CLARK, Philadelphia, Pa.
Emergency Committee—P. H. GADSDEN.
Finance—E. H. ROSENQUEST, New York, N. Y.

Gas & Electric Service (National)—W. R. ADDICKS, New York City.
Gas Oil Committee—J. B. KLUMPP.
Gas Securities—RANDAL MORGAN, Philadelphia, Pa.
Funds for Gas & Electric Service—H. L. DOHERTY, New York, N. Y.
National Fire Protection Assn., Membership in—W. R. ADDICKS, New York, N. Y.
Relations with Other Assns., etc. (Formation of Geographic and Company Sections)—L. R. DUTTON, Jenkintown, Pa.
Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
Standard Pipe Threads (International)—W. CULLEN MORRIS, New York, N. Y.
Taxation—P. H. GADSDEN, Philadelphia, Pa.

No Lost Motion at Southern Meeting

THE Southern Gas Association is to be congratulated upon its splendid meeting held at Norfolk, Va., June 22 to 24:

Louis Stotz of the A. G. A. Headquarters staff returned enthusiastic over the excellent attendance of nearly 200 Southern gas men, but more particularly over the intense interest and general discussion of the serious problems confronting the industry.

It augurs well to have our representatives at state and national meetings reach a common understanding and decision to work as a unit in meeting the major problems before the gas business.

Mayor Roper of Norfolk in his address of welcome voiced the sentiment that the attitude towards public utilities should be such as to provide sufficient revenue to take care of the invested capital, depreciation, overhead and a fair return on the investment.

Throughout the Convention the subject most predominant and most often discussed was that of Publicity, and the need of telling the public facts which would help create a favorable sentiment and pave the way for public approval of granting relief to gas companies.

The important part the American Gas

Association is taking through its Emergency Committee, to carry on a systematic and intensive publicity campaign, having for its object the securing of fair rates, the elimination of all candle-power requirements and a lowering of the B. t. u. standard was discussed on several occasions during the Convention. That every company do its part locally in carrying out the program of the Emergency Committee, was accepted as a grave necessity.

A Resolution was adopted at the closing session instructing the Secretary to address a formal petition (as suggested in the A. G. A. Service Letter No. 9) on behalf of the Southern Gas Association, to the Chairman of the Interstate Commerce Commission requesting that body to exercise the authority granted it under Section 402 of the Transportation Act, and issue a general order establishing priority of car supply to public utilities; the Secretary under the resolution was also instructed to communicate with the various southern state utility commissions, Governors of the southern states and others in authority urging that their influence be exerted in securing adequate car supply for the movement of coal.

SPEAKING ABOUT PUBLIC UTILITIES

Speaking before an annual convention recently held in the South, a prominent mayor of one of the southern cities stated that a public utility is entitled to a fair return on its investment over and above what it costs to maintain its service, just as much as a man who sells potatoes is entitled to a fair return on his invested capital.

"For years it was the favorite outdoor sport among the politicians of this city to do every conceivable thing that they could to block the game of the public utilities of this city," said the mayor. "It made no difference what was the virtue of the proposition which was being put forward by the public utilities. Because it was desired by the public utilities, it was wrong. You can readily understand what a short-sighted, penny-wise, pound-foolish fancy it was.

"In stating my views regarding the dealings of a city with its public utilities, let me say that I can see no difference between the man who sells potatoes or the man who sells lumber, and the man who sells service, whether it be gas, electricity or transportation. The man who sells potatoes takes into consideration the amount of money he has invested in his establishment, the cost of producing these potatoes, his loss on the potatoes that spoil, and his overhead operating expenses, added to that a certain amount to be agreed upon as his profit.

"I am in favor of that attitude toward the public utility which shall provide a revenue for the utility sufficient to take care of the invested capital, the depreciation, the overhead operation, and on top of that a fair return on its investment. That may be five cents per unit of travel today, it may be six cents tomorrow, it may be ten cents six months from now, and a year from now it may be four and a quarter cents.

"But whatever it is, the man who invests his money in service and in transportation, whatever the service may be, is entitled to a fair return upon his investment over and above what it costs him to produce that service, just as truly as a man who buys trees and cuts them up and makes them into tongued and grooved lumber and sells them, is entitled to a fair return on his invested capital. That is all there is to it."

Committee On Public Utilities Information

Full-page advertisement, Lynn, Mass., Telegram-News.

The Voice of the Gas Man

THAT the press and public are manifesting an unprecedented interest in the gas business and the critical conditions which to-day threaten its existence, is evidenced by the appearance of news articles in hundreds of daily newspapers within the last six weeks, describing the serious operating conditions under which gas companies are existing. Two similar articles have recently appeared in a national weekly, with the largest circulation in the world, and editorials in many prominent papers of the country all indicate that widespread interest has been aroused. The vigorous prosecution of the Emergency Committee's program by the several State public utility information bureaus that are in existence; the appearance of company executives before Chambers of Commerce, Rotary Clubs and other local organizations, not to mention the conventions of the two leading political parties of the country, are all helping to drive home the fact by the spoken word that public utility companies to-day are fighting for their corporate lives; and the growing realization by the public of the gas industry's dire straits, as evidenced by the casual remarks of disinterested persons and the editorial comments made by some of the leading newspapers of the country, prove that the condition is not local but national and one demanding prompt attention and consideration.

The voice of the gas man is being heard. It is reaching the ears of the millions of gas consumers, the officials of public service commissions, the judges of the courts, and the State and National office holders. And the voice is being strengthened daily by the addition of other voices. With new recruits swelling the volume, it will not be long until a mighty chorus is set up which by its very

power will demand not only effective emergency relief, but the readjustment of the relation of the gas industry to the public on a basis which will insure continued and efficient service hereafter.

Looking back over the six weeks that have elapsed since the remarkable meeting held at the Hotel Pennsylvania, we see gas men thoroughly won over to the idea of a fuller and franker public expression of their problems and difficulties, following up the spoken word with the kind of action that brings results. The newspaper clippings that came into Headquarters following that meeting—clippings from practically every State in the Union—show that those present were stirred to action.

In Philadelphia, a few hours after the meeting had adjourned, S. E. Mulholland, dispatched forty telegrams to his district managers, who in turn sent telegrams to their senators and representatives, and the result was 110 newspaper articles published in a dozen or more Indiana papers. How this mass of publicity reflected itself in one novel but effective manner is shown by the cartoon which appears on an accompanying page.

During the same week more than 40 inches of publicity appeared in two Rochester, N. Y., papers alone, followed by a quarter-page advertisement in the Rockford, Ill., *Morning Star*, of the Galena editorial, inserted by George D. Roper, The Associated Press, the United Press and the Hearst leased wire service all sent out articles on the meeting and they have used the news bulletins of the Emergency Committee on several occasions since then. This is significant in view of the fact that the men who direct the affairs of these powerful agencies of public enlightenment are men with a trained national viewpoint; and they are

quick to discern a situation which is purely localized in character as against one which affects the great mass of people of this country.

While these news articles mentioned above were fresh in the public mind, there appeared the first article in the *Saturday Evening Post*. When J. P. Crowley, of the St. Paul (Minn.), Gas Light Company, heard of it, he secured all available local copies of that issue and mailed them to a selected list, including large industrial users of gas. He also distributed copies among the employees of his plant. H. H. Ganser, of the Counties Gas and Electric Company, of Norristown, Pa., called attention to this article by running an advertisement on the front pages of the two local newspapers for ten days, and a three-column advertisement also appeared in the Beaumont, Texas, *Enterprise*.

Closely following the magazine article, came Mr. Fogg's article in *The Chemical Age*. Again Mr. Crowley got action by having a reprint of it published on the financial page of the St. Paul *Daily News*. Next came the editorial published in the *Sun and New York Herald*, followed by a reprint in the Cohoes, N. Y. *American*. And shortly thereafter the second article in the *Saturday Evening Post*, which was reproduced in part by a three-quarter page advertisement inserted in the three leading dailies of Charleston, South Carolina, by the Charleston Consolidated Railway and Lighting Company and announced in other effective ways by gas company members.

In the meantime, a resolution protesting against the use of candle-power standards was forwarded to the proper authorities in each city where such standards exist, as well as a special news article for local publicity. One import-

ant result of this action was the publication in the Philadelphia *Public Ledger* of a strong editorial protesting in the name of oil conservation against the candle-power standard wherever enforced.

Shortly before this, Mr. Morgan, Mr. McCarter and Mr. Gadsden went to Chicago and presented the utility situation to the Republican Platform Committee. They received a sympathetic reception and as Mr. Gadsden says, "We know we planted in the minds of many men from many parts of the country the seeds of the idea that public utility companies today are fighting for their lives, and we are confident that much good ultimately will result." Countrywide publicity was obtained as the result of this trip to Chicago. The utility situation was presented in a somewhat similar manner at the Democratic Convention in San Francisco, again with favorable results even from a mere publicity standpoint.

No account of this kind would be complete without mentioning the valuable services rendered by those who have delivered public speeches. One of the most convincing talks was made by R. S. Torrance, of the Wisconsin-Minnesota Light and Power Company before the Kiwanis Club of Eau Claire, Wisconsin. His address was reproduced in full in the local paper the next day and it has no doubt created a better public sentiment toward the gas business throughout the State of Wisconsin. Other talks have been given by B. J. Mullaney, of the Illinois Committee on Public Utility Information, who also sent a letter to every gas company in the State asking them to join the Emergency Committee of the A. G. A. in arousing the country to the perils which threaten the life of the industry. Other effective talks have been made by Ralph Elsmann of the King's County Lighting Company who has added a newspaper of his own to the publicity

material now being issued to the Brooklyn press and to his consumers. There are others who have spoken, and more will speak as opportunity presents itself.

Altogether, the work begun by the Emergency Committee is proceeding under the most favorable conditions. The frequency with which editorials touching upon the industry's problems are appearing in the influential newspapers of the

country, the readiness with which newspapers, magazines, national press associations and syndicate writers use the material which is issued by the Committee, and the increasing use by gas companies everywhere of the power of publicity in its hundreds of different forms, all are helping to turn the public's attention to the necessity for affording adequate relief to an indispensable utility.

"The operation of a public utility presents the same questions as the conduct of any other business. The cost of production determines the price which must be paid by the consumer. . . . Wages, cost of materials and supplies, and all other operating costs have increased. . . . If the public service agencies are to function at all, they must be permitted to obtain the revenue necessary to keep them going. The increases necessary in the case of the Chicago utilities are substantially the same as those which have been found necessary and which must be allowed the railroads. The industrial organization of this nation is a unit and general economic conditions must be recognized.

"For those who are to-day advocating confiscation, I have only one suggestion. The people of this state have never stood for confiscation of property. Of course serious consideration is not to be given to theories, the inevitable effect of which would be to destroy the efficiency of those instrumentalities which have become an integral part of our business organization.

"When the railroads, the telegraph, the telephone, the street car, and the lighting and heating companies cease to function and are unable to keep up with the demand of a growing community, we shall have gone back a hundred years."

JAMES H. WILKERSON, *Chairman*,
Illinois Public Utilities Commission.

The Real Owners

It is worth while to let the public know that the securities of gas companies are not closely held and limited to a comparatively small group of wealthy people. Many companies are making it a point to publish this information and it serves to emphasize that the people themselves are the real owners of the utilities.

The holdings of the United Gas Improvement Company are distributed among 14,901 stockholders, with an average holding of 82 shares. Of this number 2,963 hold from 1 to 9 shares each; 4,801 hold from 10 to 24 shares each; 2,526 hold from 25 to 49 shares each and 4,611 each hold 50 shares or more.

Neutralized Relief

In an order issued by the Public Service Commission on June 29, the price of gas in Baltimore is reduced from 75¢ to 65¢ net per thousand feet and the heating standard is lowered to 500 B. t. u's. This is the result of a petition of the Consolidated Gas, Electric Light and Power Company for a reduction in the standard from 550 B. t. u's.; but the Commission accompanies this by a reduction in price. It is understood that the company has not yet accepted the order. It would be hard to imagine any gas company doing so under present conditions, if they mean to continue in business.

Associations Affiliated with A. G. A.

Canadian Gas Association

Pres.—V. S. McIntyre, Kitchener, Ont.
 V.-Pres.—C. S. Bagg, Montreal, Que.
 E. H. Caughell, St. Thomas, Ont.
 Sec.-Tr.—G. W. Allen, 19 Toronto St.,
 Toronto, Can.
 Conv., 1920, Aug. 27-28—Ottawa.

Empire State Gas & Electric Association

Pres.—Horace L. Mann, Buffalo, N. Y.
 V.-Pres.—H. W. Peck,
 C. G. M. Thomas.
 Treas.—E. H. Rosenquest.
 Sec.—C. H. B. Chapin, Grand Central Ter-
 minal, New York, N. Y.

Illinois Gas Association

Pres.—W. M. Willett, Aurora, Ill.
 Sec.-Tr.—R. V. Prather, DeWitt-Smith Bldg.,
 Springfield, Ill.
 Conv., 1921.

Indiana Gas Association

Pres.—W. W. Goodrich, Winchester, Ind.
 V.-Pres.—J. D. Forrest.
 Sec.-Tr.—E. J. Burke, Citizens Gas Co.,
 Indianapolis, Ind.
 Conv., 1921.

Iowa District Gas Association

Pres.—W. W. Taylor, Omaha, Neb.
 Sec. Tr.—H. R. Sterrett, Des Moines Gas Co.,
 Des Moines, Ia.
 Conv., 1921.

Michigan Gas Association

Pres.—E. C. Campbell, Benton Harbor, Mich.
 V.-Pres.—J. W. Batten, Detroit, Mich.
 Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas
 Light Co., Grand Rapids, Mich.
 Conv., 1920.

Missouri Association of Public Utilities

Pres.—J. M. Scott, Kansas City, Mo.
 V.-Pres.—L. P. Andrews,
 H. Spoehrer,
 Col. P. J. Kealy.
 Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St.
 Louis, Mo.
 Chmn. Affiliation Com.—Wiley F. Corl, Mex-
 ico, Mo.

New England Association of Gas Engineers

Pres.—W. F. Norton, Nashua, N. H.
 V.-Pres.—V. E. Bird, New London, Ct.
 Burton Smart, Portland, Me.
 Sec.-Tr.—J. L. Tudbury, Salem, Mass.
 Conv., 1921.

New England Gas Sales Association

Gov.—William Gould, Boston, Mass.
 Sec.—H. J. Pettengill, Jr., Woonsocket, R. I.
 Treas.—W. T. Pease, Boston, Mass.

New Jersey State Gas Association

Pres.—F. R. Cutcheon, Long Branch, N. J.
 V.-Pres.—Jacob B. Jones, Bridgeton, N. J.
 Sec.-Tr.—H. E. Mason, Long Branch, N. J.
 Conv., 1921.

Pacific Coast Gas Association

Pres.—A. B. Day, Los Angeles, Calif.
 V.-Pres.—L. B. Jones, San Francisco, Calif.
 Sec.-Tr.—Henry Bostwick, 445 Sutter St., San
 Francisco, Calif.
 Conv., 1920, Sept. 21-24—Portland, Ore.

Pennsylvania Gas Association

Pres.—J. H. Keppleman, Reading, Pa.
 V.-Pres.—E. L. Smith, Towanda, Pa.
 Luther Gaston, Lebanon, Pa.
 Sec.-Tr.—W. O. Lamson, West Chester, Pa.
 Conv., 1921.

South Central Gas Association

(formerly Texas Gas Association)
 Pres.—P. E. Nicholls, Galveston, Texas.
 V.-Pres.—C. B. McKinney, Dallas, Texas.
 F. L. Weissner, San Antonio, Texas.
 Sec.-Tr.—C. H. Seidenglanz, 1501 Commerce
 St., Dallas, Texas.
 Conv., 1920.

Southern Gas Association

Pres.—E. C. Stothart, Charleston, S. C.
 1st V.-Pres.—J. A. Forney, Charlotte, N. C.
 2d V.-Pres.—J. C. Nichols, Bluefield, W. Va.
 Sec.-Tr.—G. H. Smith, Norfolk, Va.
 Conv., 1921.

Wisconsin Gas Association

Pres.—Bruno Rahn, Milwaukee, Wis.
 Sec.-Tr.—Henry Harman, 182 Wisconsin St.,
 Milwaukee, Wis.
 Conv., 1921.

OTHER ASSOCIATIONS

Natural Gas Association of America

Pres.—Harry J. Hoover, Cincinnati, Ohio.
 Sec.-Tr.—Wm. B. Way, 904-5 Oliver Bldg.,
 Pittsburgh, Pa.
 Conv., 1921—Cincinnati, Ohio.

Society of Gas Lighting

Pres.—Alex. H. Strecker, Newark, N. J.
 V.-Pres.—W. Cullen Morris.
 Sec.—Geo. G. Ramsdell, 130 E. 15th St., New
 York, N. Y.

Treas.—Wm. J. Welsh.

Conv., 1920.

Southwestern Electrical and Gas Association

Pres.—Burr Martin, Dallas, Texas.
 V.-Pres.—A. Hardgrave,
 C. E. Corder,
 A. H. Warren.
 Sec.—H. S. Cooper, Slaughter Bldg.,
 Dallas, Texas.

Treas.—J. B. Walker.

Conv., 1921.

When Our Gas Gives Out



A Cartoon from the Fort Wayne, Ind., News.

THE NOVEMBER CONVENTION

It is not too early to make your hotel reservations for the 1920 Convention. Make sure of this by writing now direct to Mr. Taylor, Asst.-Manager, Hotel Pennsylvania, New York, where all meetings and the exhibition will be held.

Nine Months Growth!

THE surest indication of the success of an enterprise is its growth. The A. G. A. has been going ahead, steadily and surely, with increasing momentum as its value to the gas industry has become recognized. The rate of membership increase tells a convincing story and a gratifying one to the companies and men who backed with real support and interest their confidence in what such an organization could do.

Class of membership	Increase in membership for — twelve — months ending Sept. 30, 1919 Per cent.	Increase in membership for — nine — months ending June 30, 1920 Per cent.
Gas companies.....	13.6	39.3
Holding companies.....	11.0	60.0
Manufacturer companies	100.0	31.1
Individual members.....	32.0	32.3

At the time of going to press there are 16 holding companies and 416 gas companies in the A. G. A. membership. The

percentages of increase shown above indicate a growing recognition of the association's usefulness to the industry.

Many of the smaller and a few of the larger companies are still withholding their support, yet these same companies are the very ones which call constantly upon headquarters for assistance.

One day spent at these headquarters would convince the most skeptical that the A. G. A. is a live and progressive business organization, having innumerable and diversified requests made upon it for service.

The reproduction of the fifth advertisement in our membership effort, shown on the opposite page, is a tangible evidence that the assistance rendered the smaller companies is appreciated. The companies which are not in our membership might well decide to affiliate now.

New Members Enrolled in the American Gas Association, Inc.

June 10, — July 9, 1920.

GAS COMPANY MEMBERS

Grand Junction Electric, Gas & Mfg. Co.....	A. E. Anderson, Grand Junction, Colo.
Danielson & Plainfield Gas & Elec. Co.....	J. H. Burdick, Danielson, Conn.
Daytona Public Service Co.....	J. C. Lyle, Daytona, Fla.
Missouri Gas & Electric Service Co.....	John F. Gilchrist, Chicago, Ill.
Central Indiana Lighting Co.....	Harry Reid, Bloomington, Ind.
Columbus Gas Light Co.....	E. E. Clay, Columbus, Ind.
The Central States Gas Co.....	C. M. Spitzer, Vincennes, Ind.
Kentucky Utilities Co.	Harry Reid, Shelbyville, Ky.
Adams Gas Co.	Geo. F. Howland, Adams, Mass.
Arlington Gas Light Co.....	F. A. Woodhead, Arlington, Mass.
Attleboro Gas Light Co.....	Wm. J. Luther, Attleboro, Mass.
Clinton Gas Light Co.....	R. E. Freel, Clinton, Mass.
Gloucester Gas Light Co.....	W. H. Coffin, Gloucester, Mass.
Leominster Gas Light Co.....	E. O. Wedge, Leominster, Mass.
Milford Gas Light Co.....	W. H. Leonard, Milford, Mass.
North Adams Gas Light Co.....	B. K. Cook, North Adams, Mass.
Northampton Gas Light Co.....	C. B. Day, Northampton, Mass.
Worcester County Gas Co.....	H. B. Sanborn, Palmer, Mass.
Spencer Gas Co.	C. M. Durell, Spencer, Mass.
Taunton Gas Light Co.....	W. T. Soper, Taunton, Mass.
Williamstown Gas Co.	Walter A. Russell, Williamstown, Mass.
Coldwater Gas Light & Fuel Co.....	H. A. Sebal, Coldwater, Mich.
Grand Haven Gas Co.....	J. E. Spindle, Grand Haven, Mich.

Monroe Gas Light & Fuel Co.....	G. W. Dresser, Monroe, Mich.
Jackson Public Service Co.....	Albert Clabaugh, Jackson, Mich.
Citizens Gas Co.	M. A. Gascoign, Hannibal, Mo.
The St. Louis County Gas Co.....	J. E. Hillmeyer, Webster Groves, Mo.
Winston-Salem Gas Co.	Noble Clay, Winston-Salem, N. C.
Conewago Gas Co.	E. E. Bair, Hanover, Pa.
Citizens Gas Light Co.....	L. B. Herrington, Jackson, Tenn.
Wisconsin Power, Light & Heat Co.....	G. C. Neff, Madison, Wis.

HOLDING COMPANIES

Massachusetts Lighting Co.	Arthur E. Childs, Boston, Mass.
American Public Utilities Co.....	George H. Waring, Grand Rapids, Mich.

MANUFACTURERS

The Chemical Service Laboratories, Inc.....	C. C. Tutwiler, West Conshohocken, Pa.
Craig Ridgway & Son Co.....	Wm. H. Ridgway, Coatesville, Pa.
J. H. Grayson Mfg. Co.....	J. H. Grayson, Athens, Ohio.
Robertshaw Mfg. Co.	G. A. Robertshaw, Youngwood, Pa.

Active Members

Illinois (1)	Massachusetts (1)
Indiana (1)	New York (8)
Maryland (3)	Pennsylvania (5)

The thirteenth annual **Convention of the Canadian Gas Association** will be held at the Hotel Chateau Laurier, Ottawa, Friday and Saturday, August 27th and 28th.

Reservations are now in order and the following rates have been given out by the hotel management:

Single room	\$3.50 per day
Double room	\$4.50 per day
Single room with private bath.....	\$4.50 & \$5.00
Double room with private bath.....	\$6.00 & \$7.00

For those who are able to start for Ottawa, via Toronto, several special Pullman cars will be added to the Ottawa train leaving Toronto on the night of August 26th, and the Association is looking forward to quite a number of its friends and members going by this train so as to arrive in Ottawa together on the morning of August 27th, in good time for the convention proceedings.

Roundtrip rail fare from Toronto \$16.15. One-way lower berth \$2.25, compartment \$6.60, drawing-room \$7.70.

Kindly send all reservations to the Secretary of the Association at the earliest possible date.

Martinsburg, West Virginia and
Charles City, Iowa, were both
"From Missouri"



Before They Joined the A. G. A.

BUT AFTER JOINING—

Mr. Leon H. Ware, Manager of the Martinsburg Heat and Light Company, writes as follows on May 21, 1920:

"It is needless for the writer to express our appreciation of your painstaking efforts and this kind of service and assistance on the part of the A. G. A. to company members should certainly serve to make every gas company a member. I only wish there were more artificial gas companies in our state to whom I could write and interest in membership."

Mr. R. K. Runner, secretary of the Charles City Gas Company writes on May 27, 1920.

"The information you furnished is just along the lines we desired and will be of service to us in our present situation. We very much appreciate the promptness of your reply and services in this matter."

These particular letters are quoted because the above companies have annual sales of only 22 and 35 million cu. ft., respectively.

If you are managing a small gas company your problems are the same that Mr. Ware and Mr. Runner are meeting in West Virginia and Iowa.

These companies cannot afford to spend a dollar that does not render a tangible return —

N O R

Could they afford NOT to spend the few dollars required for the service they are receiving.

That's THEIR reason for joining the A. G. A.

Write us today—or better still—write Mr. Runner or Mr. Ware about A. G. A. Membership.

ACCOUNTING SECTION

A. P. POST, Chairman

H. W. HARTMAN, Acting Secretary

A. L. TOSSELL, Vice-Chairman

MANAGING COMMITTEE — 1920

At Large

ALDEN, CHARLES A., Boston, Mass.
BRUNDAGE, H. M., New York, N. Y.
ERICKSON, HALFORD, Louisville, Ky.
PETTES, W. H., Newark, N. J.
POST, A. P., Philadelphia, Pa.
REES, RICHARD, (Mfr.) Kalamazoo, Mich.
SCHMIDT, WM., JR., Baltimore, Md.
SCOBELL, E. C., Rochester, N. Y.
TOSSELL, A. L., Chicago, Ill.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canada)
CHAPIN, C. H. B., New York, N. Y. (Empire State
G. & E. Ass'n.)
EATON, H. M., Detroit, Mich. (Michigan)
HAASE, EDWARD, Milwaukee, Wisc. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
HOY, CHAS. W., Glasseboro, N. J. (New Jersey)
JAMES, F. M., Aurora, Ill. (Illinois)
MAYNARD, H. B., Waterloo, Iowa. (Iowa)
MCCABE, J. B., Dallas, Texas. (South Central)
NORTON, W. F., Nashua, N. H. (N. E. Gas Eng.)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
SHEARON, E. P., Hammond, Ind. (Indiana)
STOTHART, E. C., Charleston, S. C. (Southern)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Automobile Cost Accounting—S. J. PALMER, Chicago, Ill.
Merchandise Accounting—W. A. SAUER, Chicago, Ill.
Job Order Systems—W. G. STERRETT, Chester, Pa.
Vice-Chairman, F. M. JAMES, Aurora, Ill.
Office Labor Saving Devices—J. L. CONOVER, Newark,
N. J.
Papers—H. M. BRUNDAGE, New York, N. Y.

State Representatives—J. W. HEINS, Philadelphia, Pa.
Uniform Classification of Accounts and Form of Annual
Report to Public Service Commissions—W. J.
MEYERS, New York, N. Y.
Uniform Accounting Nomenclature—W. H. PETTES,
Newark, N. J.

Papers Committee Submits Report for 1920 Convention

AT a meeting of the Managing Committee at Headquarters, June 29, definite assurances of the following papers for the Accounting sessions were reported:

Purchasing and Store Room Accounting, L. H. Werner, New York, N. Y.

Continuous Inventory of Fixed Capital, E. Johnston, Syracuse, N. Y.

Fire Insurance Practices of Utility Companies, J. G. Reese, Baltimore, Md.

The Importance of the Accounting Department under Commission Regulation, Rufus C. Dawes, Chicago, Ill.

A recommendation was unanimously adopted that the Committee secure an additional paper of interest to the Commercial Office man. Bonus systems and other means of securing and holding clerical help will be considered as a subject for this paper.

Abstracts of several committee reports were approved and the balance of the committee program will be submitted shortly.

Distribution of Papers and Reports

It has been decided to prepare and forward to all members a postcard or form letter listing all papers and reports to be submitted at the various sessions of the Convention. Members will be requested to check the material in which they are interested and copies of papers and reports checked will be forwarded to them as soon as printed.

Our Accounting members will appreciate the importance of promptly returning such notice properly checked as abstracts only of papers and reports will be presented at the Convention. By this means each member will receive in advance of the Convention *only* such material as he is interested in and will be in a position to take part actively in the discussion on the floor.

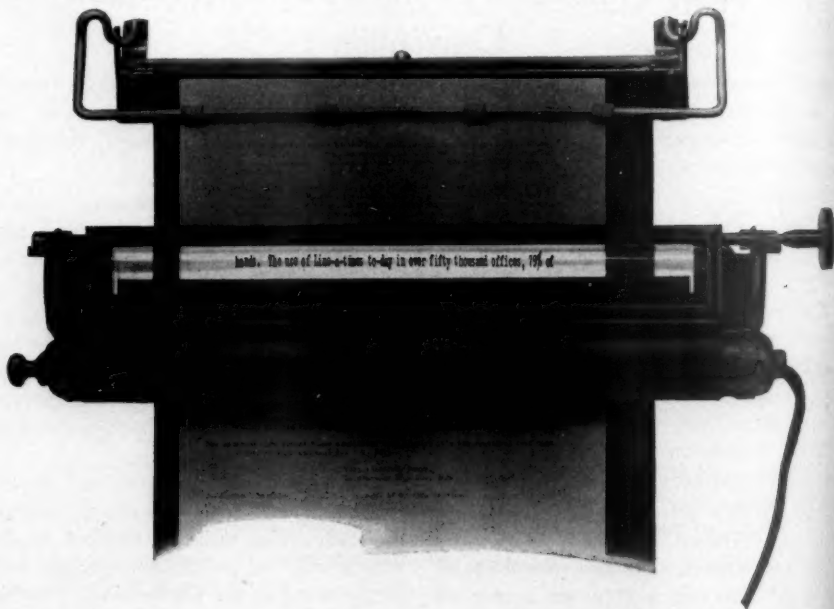
Public Utility Man Designs Office Labor Saving Device



ing the place" for the copyist. The device shows promise of eventually becoming an important addition to the many standard American office appliances which have earned for themselves the coveted characterization of "necessities."

IT has remained for Mr. Robert M. Searle, President of the Rochester Gas and Electric Corporation to design an apparatus which goes a long way in removing the irksomeness from the work of the copyist.

This contrivance illuminates and magnifies printed, written or typed matter and concentrates the vision upon each line as it is being copied—literally "find-



An understanding of the use and application of the machine may be gained readily from the illustrations, together with the following report of test abstract-

ed from the files of the Committee on Office Labor Saving Devices of the American Gas Association:

(Continued on page 492)

By EMIL ULBRICHT

The space reserved for entry of the Treasurer's report is shown in the lower half of the illustration, since his credits are unlike those which affect the receipt of cash at the branch offices. Upon completion of the various entries the columns would be totaled and then cross-footed to prove the accuracy of the en-

Fig. E

both sides and two months' transactions recorded.

A record of the issues of materials from the storerooms is an important factor in ascertaining the cost of doing business and must be reported by the Storekeepers in a manner which will truly reflect the proper classification of the charges. In many companies, stores material is divided into two classes, principally General Stores and Commercial Stores, the former representing pipe, fittings, etc., and the latter gas appliances, ranges, etc. Books are kept at the storerooms and the accounts carried separately at the General Office to show the distinction between both classes. Hence, the schedule shown in Fig. H can be used to record the issue of both classes of material by completing the heading, filling in the schedule number, one being assigned to each class, and inserting the final number of the account in the lower right hand corner.

Fig. H

Fig. I is an illustration of a schedule used for many purposes and in this article the description will apply to its use as a medium for recording the charges at the General Office to persons other than those reflected through the Gas Sales and Sundry Sales Reports.

It often occurs that charges are made to outsiders for the performance of some specific task, the return of material, the

payment of which had already been made, a claim for shortage of delivery, or for a readjustment of invoices already paid. These items are taken care of at the General Office and Auditor's Charges prepared upon which all of the information necessary to an intelligent understanding of the charge is entered and numbered consecutively. These charges form the basis of the entry to the detail

Fig. I

ledger, in which are kept the accounts with debtors, and also for use in preparing the schedule setting forth the accounts to be credited.

The proper location of the accounts on the schedules, arranging them in groups as they apply to the various indicant or control accounts, is determined by the experience gained in the preparation of those for previous periods. A space is reserved, however, for a summary of the indicant accounts for posting to the general ledger. Each of the remaining subdivisions is headed up with the name of the account to be credited. In the first space under each subdivision the number of the charge is entered and the amount in the remainder, all charges being summarized under the respective accounts. The grand total of the individual charges should equal the grand total of the various credits, before any effort is made to post the accounts.

(To be continued.)

Speed in Spite of Carbon Paper

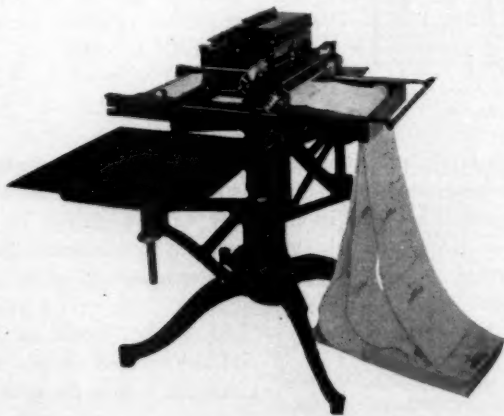
IN the report of the Committee on Office Labor Saving Devices, presented before the Accounting Section of the American Gas Association at the last convention, there was described among other office appliances a typewriter specially designed for routine work involving the making of many carbon copies.

Since the presentation of that report there has been placed on the market another type of machine, built to speed up and simplify the preparation of routine forms which require the making of many carbon copies.

The machine heretofore described in the report of the Committee is a "fan-fold" machine with a roller-platen. The machine herein described is a machine of flat-platen design. In the roller-platen machine the typing mechanism is immovable; the platen and carriage of the machine are manipulated for spacing purposes. In the flat-platen design the whole typing mechanism or "head" is moved about over the surface of the form; the platen or "bed" remains stationary.

To comment on the relative merits of either principle is not intended. A description of the roller-platen machine will be found in the Report of the Committee on Office Labor Saving Devices, soon to be distributed. The flat-platen type which has been developed since the submitting of the report is illustrated and described herein.

The system followed by the gas companies requires the making of many copies of certain routine forms. Practice varies but the principle remains the same. The use of multi-copy forms not only furnishes an accounting record of a transaction, but provides a quick distribution of departmental orders incident to the fulfillment of the terms of the transaction. If a customer orders merchandise a record is given to the customer; the shop and the storekeeper each receive copies and the accounting office may receive as many as three for numerical files, geographical files and for a control on the performance of the work. Other gas forms which are often written with two or more copies are contracts, purchasing agent's requisitions, notices to



The Typewriter with Stationery Arranged for Continuous Operation



Inserting the Carbon Preparatory to Continuous Operation

delinquent consumers, records of complaints and leaks, and orders for the setting, removing, turning-on and shutting-off of meters.

In large companies the preparation of these routine forms is continually being done. It amounts to a considerable part of the administrative work of any gas commercial office. The design of a special form of typewriter to perform this work with greater speed, legibility and economy is an appreciable achievement.

Stationery, used with the machine, is procured in continuous multiple-folded form, and a tray in back of the machine

virtually constitutes a magazine from which the machine is fed. Thus, if the typing were to be done in sextuplicate there would be six strips of paper feeding simultaneously from the supply in back of the machine.

The ends of the paper are brought over flanged rollers. The adjustable flanges prevent side to side motion of the paper. Carbon paper is inserted between the sheets of paper and the carbon clamped on the sides. The carbon paper does not then have to be touched until it is worn and needs replacement. It may be fed from a multiple-wound roll, or single sheets may be used.



Releasing Tension on Tear Off Knife and Pulling Out for Tear-Off, the Stationery Sliding Between Secured Carbon Paper

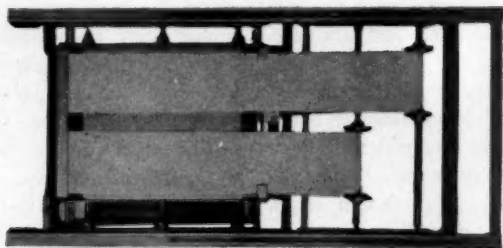
When once the ends of the paper have been aligned, typewriting may be done continuously until the paper is exhausted. When a form is typed the operator grasps the paper, pulls it out and tears it along the edge of a steel knife. Another is then in place for typing. When once the forms are set and started the work done on the machine amounts to writing and tearing off and then repeating the operation until the magazine of paper is exhausted.

With proper paper and carbon stock the machine can write as many as fifteen copies. Extra copies, cards or tags, not a part of the routine can be inserted if

required.

Two sets of different forms may be typed with the platen adjusted as illustrated and narrow forms may be used with wide forms, provided the narrow forms are segregated at the top.

It is only possible to give here a brief description of the machine, its adaptability and construction. It may be hazardous, however, that the production of special machines for this kind of work is a step in the right direction. A consideration of their use is worthy of the time of any accounting manager whose form-writing work is a factor of proportions.



The Platen, with Arrangement of Carbon Paper, Showing Twin-Type Possibilities



(Continued from page 486)

The appliance consists of a lacquered sheet-steel copy-holder which moves up and down under a stationary illuminated lens. This action is controlled by a lever extending to a point within several inches of the typewriter space-bar. The copy-holder moves exactly the same distance at each throw of the lever or for unequal distances, as the operator wishes. The machine can therefore be used with equal facility for copying from ruled or unruled sheets. A light-tension spring attached to the grip on the copy-holder provides a convenient means for folding back finished work.

Illumination along the entire length of the lens is effected through the use of a special type concealed electric lamp, the rays of which are reflected by angle-opposed mirrors.

The lens is adjustable to various visions by means of a thumb-screw and the injurious glare usual in concentrated light from an electric filament is removed by two tinted glass filters.

The practical effect of the whole is to illuminate and magnify line by line at an unchanging range of vision the data being copied. Difficult copying work such as original financial and statistical statements, drawn up in weak penciled figures, may be copied in an easy and unstrained manner in the darkest room. Fine print is made easily readable and even the characters impressed on black carbon paper stand out in bold relief through the use of the machine.

ADVERTISING SECTION

GEORGE WILLIAMS, Chairman

CHAS. W. PERSON, Secretary

M. C. ROBBINS, Vice-Chairman

MANAGING COMMITTEE

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BRILL, A. P., Pittsburgh, Pa.
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COLLINS, D. J., Philadelphia, Pa.
GOULD, WM., Boston, Mass.
GRIBBEL, W. G., Philadelphia, Pa.
HANLAN, JAMES P., Newark, N. J.
MCDONALD, DONALD, New York, N. Y.
MULLANEY, B. J., Chicago, Ill.
ROBBINS, M. C., New York, N. Y.
ROPER, GEO. D., Rockford, Ill.
RUTLEDGE, F. J., Philadelphia, Pa.
WILLIAMS, GEORGE, New York, N. Y.

Representing Affiliated Societies

ALLEN, GEO. W., Toronto, Can. (Canadian)
AUSTIN, E. R., Sumter, S. C. (Southern)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
FUGATE, FRANK, Detroit, Mich. (Michigan)
HIGGINS, A. A., Providence, R. I. (New England)
JASPERSON, R. O., Chicago, Ill. (Wisconsin)
LESTER, F. M., Chicago, Ill. (Illinois)
MANTLE, G. D., Oakland, Cal. (Pacific Coast)
MARTIN, E. H., Des Moines, Ia. (Iowa District)
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
ROLSTON, R. J., Philadelphia, Pa. (Pennsylvania)

A "Corner" On Ideas

THE statement was made some months ago that this Section would become a clearing house of publicity and advertising information if member companies would cooperate to the extent of forwarding us copies of their publicity matter.

During the past sixty days there has been a noticeable increase in the amount of material sent us. This is especially true regarding company advertisements announcing increases in rates or petitions for increases. During this period, also, there has been sent us a number of urgent requests asking for material of this very nature.

In one instance, a company in the middle west wired for assistance in the preparation of advertising copy designed to tell its consumers of its operating difficulties. Several advertisements covering the subject were promptly forwarded to this company. They came originally from the South.

Another company recently found itself in immediate need of some publicity suggestions for announcing an increase in rates, and of telling its consumers what would happen to them if the plant were forced to shut down.

Several days prior to this request, we had received from a company in Pennsylvania copies of several advertisements of this character which had been used successfully. We merely had to pass these on to the other company to fulfill our obligation.

These are only four cases, picked at random showing how this give-and-take spirit of cooperation is working out to the mutual advantage of the man who originates an idea and who passes it on to us with the desire that it may be of use to someone else in the gas business, and the man who needs that very idea when he is in a tight fix and who gets it without expense—and who is rightly entitled to it.

It has been aptly said that nobody has a "corner" on ideas these days. What we need in the Publicity and Advertising Section is a collection of ideas in the form of pamphlets, booklets, gas-bill stickers, newspaper articles, house organs, advertisements and other miscellaneous matter that will make us a veritable clearing house of information for the whole industry.

We are making big strides in this direction, and we become more useful as

the publicity matter mailed to us becomes more varied and voluminous.

Have you any advertising or publicity material in your files that you have not sent us previously? Have you completed a successful merchandising campaign without letting us know how you did it? Are you advertising in your papers with-

out sending us copies of your advertisements? And, above all, are you sending us clippings of the news articles after they appear in your local press?

If not, collect everything you have on hand and send it to us at once. We will make it live a life of usefulness long after you have forgotten about it.

Preparing for the Convention

PLANS for the Publicity and Advertising Section's program for the forthcoming annual Convention were discussed at the meeting of the Managing Committee on June 30, at which Messrs. Robbins, Gribbel, Rolston, Franklin, Higgins, Brill and Roper were present.

It was agreed that in addition to one important address on publicity to be delivered before a general session of the Convention, the Section will confine itself to one afternoon meeting at which not more than four fifteen-minute papers will be read and discussed on the various branches of publicity and advertising of benefit to company members of the Association.

An interesting departure from former

Conventions will be an exhibition of publicity and educational matter issued by the Association, with the Secretary of this Section in attendance throughout the Convention. This exhibition will include copies of the "good will" advertisements and original drawings, an interesting display of newspaper publicity secured during the past year, a selection of the best advertisements published by company members of the Association and forwarded to Headquarters and various other material of an original nature which will tend to stimulate interest in publicity.

There will be no further meeting of the Managing Committee until September.

"Gas" Publicity in the Magazines

Valuable publicity for our industry has resulted from the publication of two articles by Mr. Parsons in recent issues of the *Saturday Evening Post* and the article by Mr. Fogg which appeared in the *Chemical Age*. A number of other articles on various phases of the gas business are scheduled for publication in the near future.

These include "Hardening Steel in Gas-Fired Furnaces," "The Gas Meter

as an Accurate Measuring Instrument" and the "History and Development of Gas Lighting," all to appear in *Scientific American*, "Roasting Coffee with Gas," to appear in *The Tea and Coffee Trade Journal*; "Singeing Cotton and Knit Goods" to appear in *Cotton*; "Industrial Fuel Engineering Service" to appear in *Coal Age*, and "Modern Gas Burning Equipment in the Home" to appear in the October issue of *McCall's Magazine*.

Fair Play and Fair Pay

THIS is the title of our fifth "good will" advertisement which is reproduced elsewhere in this section. It will fit in excellently with a publicity campaign to create favorable public sentiment for an increase in rates and it can be used effectively in many other ways.

When filing a petition for an increase, published announcement of the fact should be made and no opportunity lost to line-up the public in your behalf by taking the story of increased costs and scarcity of gas-making materials straight home to them. A simple announcement of this sort, accompanied by this fifth "good will" advertisement would make a very favorable impression on your

public.

If the text does not meet with your approval, you are at liberty to change it. The art design cannot be changed, of course, but it is of such a general nature as to fit text of any description. Your local newspaper man will tell you of a dozen different ways in which this advertisement may be used to your advantage.

You may obtain a prompt delivery of matrices or electrotypes in either the three or four-column newspaper width by sending your order to us. The price for a matrix is \$3.00 and for an electrotype, \$4.00.

Photographs Needed for Magazine Publication

With the Section widening its range of publicity, there is a steady demand for photographs to accompany articles for publication in the magazines.

At the present time there is an urgent need for good, clear, unsoiled photographs showing persons, preferably pretty girls, operating gas-burning equipment for the home. The editors insist in every case that the photographs show a person operating the appliance, and they take particular pains to discard any photographs which have been retouched or used before.

If the manufacturers of appliances for use in the home wish to avail themselves of this free and valuable publicity, they should send photographs of their appliances to this Section and these will be kept on file and issued to the magazines when requests are made for illustrated articles.

If it is desired, photographs will be returned after they have been published,

but it is the plan of the Section to build up a wide and diversified collection of pictures to meet every editorial requirement and this is of course impossible to do if a photograph is merely loaned instead of given outright to us.

One easy way of taking advantage of this publicity opportunity is to keep this Section in mind whenever you are photographing your equipment for the purpose of making a sales booklet or advertisement. By sending us a photograph at this time, we will have the most recent picture of your appliances and it will save you the trouble of having additional prints made later on.

It is well to bear in mind that line-cuts, electrotypes and metal illustrations of all descriptions cannot be used. The same applies to clippings of pictures appearing in papers, booklets, magazines or house organs. What is needed is original photographs of human interest value such as have been described above.



FAIR PLAY *and* FAIR PAY

Indifference to the welfare of your gas company is, in reality, indifference to your own welfare and the welfare of your community.

To continue to render its best service and at the same time to develop the growth and prosperity of your community, your gas company must be permitted to charge rates that will enable it to earn a reasonable interest on its investment and thus be able to attract new money for extensions and improvements.

Inability to do this not only cripples a service which is a daily necessity to you, but makes it impossible for your company to enlarge its plant and system to meet the growing needs of your community.

How will this affect your own comfort and convenience? How will it affect trade, real estate values, and the progress of the community in which your life is centered?

You know the answer.

You and every other real American want nothing so much as you want fair play. This is precisely what your gas company must have. Let your voice be heard.

(Insert name of your Company here)

MEMBER OF THE AMERICAN GAS ASSOCIATION



Fifth of a series of twelve "good will" advertisements especially prepared for member companies. Price of series complete with matrices in three or four-column newspaper width, \$36.00. Price of electrotypes, same size, \$48.00. Order immediately.

COMMERCIAL SECTION

C. A. MUNROE, Chairman

LOUIS STOTZ, Secretary

J. P. HANLAN, Vice-Chairman

MANAGING COMMITTEE — 1920

At Large

BARROWS, GEO. S., Providence, R. I.
BARTLETT, C. E., (Mfr.) Philadelphia, Pa.
BENNETT, GEO. E., New York, N. Y.
BOND, C. O., Philadelphia, Pa.
BUCKMINSTER, ROLLIN, Pawtucket, R. I.
BURNS, J. J., St. Louis, Mo.
CHRISTMAN, H. S., Philadelphia, Pa.
CLARK, H. H., Chicago, Ill.
CLARK, W. J., Mt. Vernon, N. Y.
DAVIES, J. E., Chicago, Ill.
DODSON, H. K., Baltimore, Md.
DOULL, R. S., New York, N. Y.
ELSMAN, RALPH, Brooklyn, N. Y.
GASTON, LUTHER, Spokane, Wash.
GOULD, WM., Boston, Mass.
HUTER, HARRY W., (Mfr.) Baltimore, Md.
JARDINE, BERT H., Knoxville, Tenn.
JASPERSON, R. O., Chicago, Ill.
KARSHNER, G. M., New York, N. Y.
KING, THOMSON, Baltimore, Md.
KNAPP, F. H., (Mfr.) Pittsburgh, Pa.
LOEBELL, H. O., New York, N. Y.
MACSWENEY, J. P., Rochester, N. Y.

MAXON, H. R., (Mfr.) Muncie, Ind.
MUNROE, C. A., Chicago, Ill.
MYERS, J. B., Philadelphia, Pa.
PEFFLY, I. W., (Mfr.) New York, N. Y.
PETTENGILL, H. J., Jr., Woonsocket, R. I.
PISER, THEO. H., Boston, Mass.
POST, A. P., Philadelphia, Pa.
RASCH, W. T., New York, N. Y.
STANNARD, CLARE N., Denver, Colo.
TRUMBULL, G. R., New York, N. Y.
VINCENT, G. I., Syracuse, N. Y.
WRIGHTINGTON, E. N., Boston, Mass.

Representing Affiliated Societies

BARTON, WM. H., Portland, Ore. (Pacific Coast)
BORDEN, A. W., Hastings, Nebr. (Iowa Dist.)
BOWLIN, M. A., Jacksonville, Fla. (Southern)
BRANDES, JEROME, Chester, Pa. (Pennsylvania)
BURKE, E. J., Indianapolis, Ind. (Indiana)
CHAMBERLAIN, G. R., Grand Rapids, Mich. (Michigan)
CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
FLAUT, J. J., New Orleans, La. (South Central)
HANLAN, J. P., Newark, N. J. (New Jersey)
MCINTYRE, W. H., Ont., Can. (Canada)
ST. JOHN, JOHN, Madison, Wisc. (Wisconsin)

CHAIRMAN OF SECTION COMMITTEES ORGANIZED TO DATE

Sales Development—WM. GOULD, Boston, Mass.
Compensation (Sub)—G. M. KARSHNER, New York, N. Y.
Filling in the Valleys in Gas and Appliance Sales (Sub)—
WM. GOULD, Boston, Mass.
Maintenance (Sub)—ROLLIN BUCKMINSTER, Pawtucket,
R. I.
Putting Non-Profitable Consumers on a Profitable Basis
(Sub)—B. H. JARDINE, Knoxville, Tenn.
Sales Campaigns (Sub)—H. J. PETTENGILL, Jr., Woon-
socket, R. I.
Work Schedule (Sub)—G. I. VINCENT, Syracuse, N. Y.
Gas Lighting—THEO. H. PISER, Boston, Mass.

Heating—GEO. E. BENNETT, New York, N. Y.
Industrial Fuel Sales—H. H. CLARK, Chicago, Ill.
Furnace Performance Standards (Sub)—I. LUNDGAARD,
Rochester, N. Y.
Improvement of Atmospheric Burners (Sub)—JEROME
BRANDES, Chester, Pa.
Proportional Mixing (Sub)—CHAS. C. KRAUSSE, Balti-
more, Md.
Recuperation and Regeneration (Sub)—H. O. LOEBELL,
New York, N. Y.

Our Gas Lighting Business

UP to July first 125 member gas companies had answered the questionnaire sent out by the committee which is making a study of the gas lighting conditions throughout the industry.

These replies disclose a most interesting condition which the committee will comment upon in their report. Those companies which have not yet sent in answers are requested to do so immediately.

Mr. J. P. Hanlan, Vice-Chairman of the Commercial Section has agreed to arrange for a conference of men in and adjacent to New York who are inter-

ested in the subject of developing the gas lighting business. This meeting will be held in the near future at Association headquarters and those who can attend are asked to communicate with the Secretary of the Section.

The Gas Lighting Committee is co-operating with the Manufacturers Section in arranging for a display of modern gas lighting units of all kinds to be shown at the annual exhibition in November.

As the result of an investigation made recently by Mr. Barnes it was learned, that with the exception of two or three firms, the fixture manufacturers are not

particularly interested in manufacturing gas fixtures, for the reason that the demand by gas companies for high grade or even cheaper gas fixtures is not sufficient to compensate the manufacturers going after such business.

Such an exhibit to be profitable to both parties, the manufacturer and the gas company, must be on a basis of mutual support. The manufacturer before he

can be induced to make a substantial investment in equipment for turning out gas fixtures must be assured of a market for his product. The gas companies should give such tangible evidence of support by the placing of orders at the Convention. Those manufacturers which display the best fixture should be rewarded. What better reward than the placing of substantial orders at that time.



Real Sales Talks in Industrial Fuel Papers

The industrial fuel sessions of the coming Convention of the A. G. A. promise to be among the best ever held.

At a meeting of the Industrial Fuel Sales Committee held in Chicago on June 17th and 18th, 80 per cent. of the 20 short snappy sales talks to be presented at the Convention were read and approved. The titles of these papers have been published in previous issues of the MONTHLY and have been prepared with the thought of stimulating real sales in their respective fields.

The authors are men well qualified to write on the subject assigned to them and they are expected to cover the subject thoroughly. In order to shorten the time as much as possible each man was instructed to abstract his paper to not more than 1,000 words.

The sub-committee on "Improvement of the Design of Atmospheric Burners" presented its final report. The real work on this report has been done under the direction of Mr. W. M. Berry of the

U. S. Bureau of Standards, Washington. The report is apparently very complete and indications are that it covers a great need in the manufacture of gas consuming appliances.

The sub-committee on "Performance Standards" reported that no further steps would be taken this year in the subject assigned to them.

The committee voted to recommend to the Executive Board that the Association rent a booth at the Convention of the American Steel Treathers' Society to be held in Philadelphia in September. It is the purpose to bring gas fuel for heat treatments before the practical men of industries who will attend the meeting.

There were about 18 members of the committee present at the two-day session. After the regular business had been disposed of the majority of the men were shown some of the larger and most interesting gas fuel installations in Chicago through the courtesy of Mr. F. F. Cauley of the Peoples Gas Light & Coke Co. and his corps of assistants.

Recuperators and Regenerators

First of a series of articles by HENRY O. LOEBELL, Chairman of Sub-Committee on Recuperation and Regeneration.

ARTICLE I.—GENERAL PRINCIPLES INVOLVED

Every manufacturer is diligently searching for an economical and permanent solution to his fuel problems. During the past few years the manufacturers have had to meet a constantly increasing cost for most fuels and an increasing difficulty in obtaining them. If the manufacturer had been able to increase the efficiency of utilization of his fuel he would have offset the increased price and held his fuel cost per unit of output nearly constant.

If a summary were made of all the heating operations now carried on, exclusive of steam generation, we would probably find that of the original heat units purchased not more than 5% ever found their way to the material to be heated. Of the 95% which is wasted about 60% is carried away as sensible heat in the products of combustion. In view of the fact that in nearly every heating operation cold products are supplied to the furnace, it seems that the waste heat might be used to advantage in preheating these products.

There are three commercial ways in which this heat may be utilized and increased economy obtained:

1. By preheating the gas or air or both, necessary for combustion.
2. By preheating the working material.
3. By generating steam in a waste heat boiler.

The first method lends itself most readily to the general heating operations in a factory and will be dealt with in these articles on Recuperation and Regeneration.

When we speak of a Recuperator it is intended to mean an apparatus in which the waste gases pass continually in one direction thru a passage which is separated from another passage, in which the air or fuel gas is continually flowing in the opposite direction.

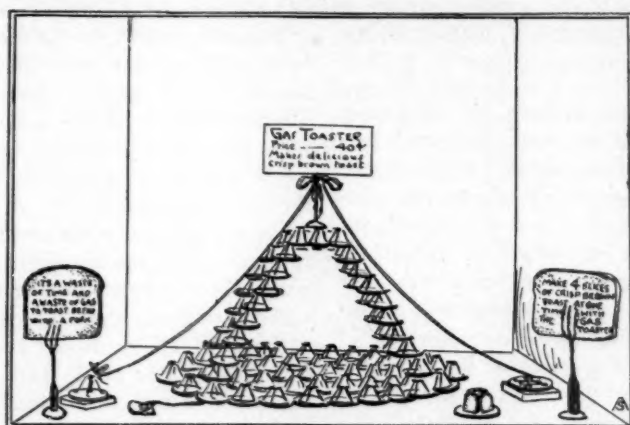
By a Regenerator we mean an apparatus in which the hot waste gases are passed in one direction over a heat-absorbing medium, thus raising the temperature of this medium. At the same time fuel gas or air in passing, in the opposite direction, thru a similar passage and extracting heat from the medium which has previously been heated by waste gases. These operations are periodically reversed so that the heat absorbing material is alternately heated by the waste gases and cooled by the fuel gas or air.

The principles of recuperation and regeneration were first developed in order that high temperature operations might be carried on with producer gas, and many people still associate recuperators and regenerators only with high temperature operations. It was found in practice, however, that these principles might be applied to any heating operation in order that better fuel efficiency might be secured.

In any heating operation carried on in an ordinary appliance the waste gases must of necessity leave the heating chamber and in general they leave the furnace at a temperature higher than the temperature desired in the material to be heated. As we have many different heating operations, each carried on at a different temperature, we are confronted with a separate problem in the design of a fuel economizer for each operation.

(Continued on page 502)

Window Display Suggestions for August



Display for Second Week in August

17a

The center setting of this display should be in the form of a large toaster—a framework made of stiff wire will give the outline, to which should be attached real gas toasters.

On top of the center display place a card sign and run a yellow ribbon to each side attached to gas toaster mounted on carton.

Place a large wire fork in front corners of the window and mount thereon cardboard pieces of toast used as signs.

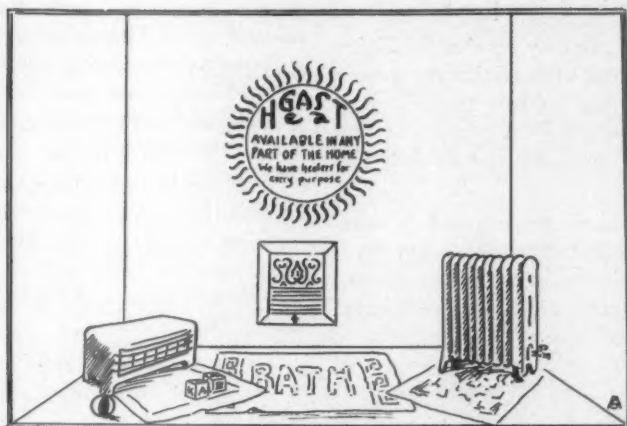
The fork on the left should show a charred piece of toast and a real toaster on the right containing four slices of nicely toasted bread.



Display for Third Week in August

17b

By way of contrast, some fire wood, a shovel of coal, then a gas fireplace heater, and over all a large sign with great brightly hued letters, hung from above with invisible threads.

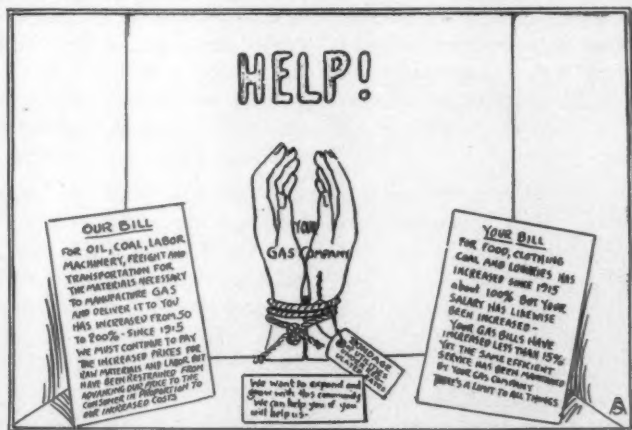


Display for Fourth Week in August

17c

Three or more different types of gas heaters are shown, each with some other piece of house furnishing suggestive of the room to which this particular type is suited. A nursery rug with toys; a bath mat; and a rug for a living room.

A circular sign lettered neatly with some brilliant color would add to the display.



Display for First Week in September

17d

Here is a plain yet forceful display that will attract attention and set people thinking.

The feature of this display is the large cut-out of two hands. Attached to this setting is a tag reading "Bondage of Utilities Under Regulation."

The large word "HELP" in red letters over the hands will attract attention.

On each side a panel sign should convey your message to the public, telling how the increased costs of labor and essential gas making material, as well as their shortage, are affecting the service to the community.

This display will tie up well with the publicity effort of the Emergency Committee of the A. G. A.

(Continued from page 499)

In general, we may say that the higher the temperature of operation the greater is the percentage of heat carried out in the waste gases and the greater the possibilities of increasing the efficiency of the operation.

In small furnaces operated at comparatively low temperatures the fixed charges and increased operating costs of a fuel economizer might be more than the saving effected, but with larger furnaces and higher operating temperatures, fuel economizers of the Recuperator or Regenerator type will earn a very substantial return on the investment.

Some recuperative and regenerative furnaces have been developed in which both the gas and air are preheated, but as a general statement we may say that gases containing hydrocarbons can not be preheated to a temperature higher than 500° F., because these hydrocarbons decompose above this temperature and deposit soot in the gas passages thus destroying the function of the recuperator or regenerator.

Some producer gases containing a small percentage of hydrocarbons are being successfully preheated in regenerative furnaces.

Gaseous fuel is the only fuel with which the full advantages or recuperation or regeneration may be derived. No matter what fuel is used, it is essential, for economical results, that combustion be as complete as possible with the least surplus of air. This condition is only possible with a gaseous fuel, because a fuel in any other state can not mix in the

proper proportion with the required amount of air. Considerable difficulty is encountered when using highly preheated air with solid fuel from clinker formation and rapid deterioration of grate bars and furnace linings.

With liquid fuel, preheated air might be used if a separate means of atomizing the oil were used. Some difficulty might be encountered with carbon deposits in the burner nozzles and the rapid destruction of burner nozzles.

A recuperator lends itself more readily to a medium temperature operation, or from 500° F. to 1400° F., while a regenerator may be used on operations from 1400° F. to 3000° F. These limits are due entirely to the materials available for construction of the recuperator or regenerator.

With a recuperator we are able to obtain a constant temperature in the preheated air or gas, while with a regenerator there is a variation in the degree of preheat at different stages of the cycle due to the alternate cooling and heating of the heat absorbing medium.

At present prices of fuel, manufactured gas can compete on a straight cost basis with other fuels, but this is no reason why the gas engineer or the manufacturer should attempt to apply gas in a makeshift appliance. They should use a well designed appliance, making use of recuperators or regenerators if possible, thus offering a permanent and economical solution of the fuel problem.

Subsequent articles will take up a discussion of the design of Regenerators and Recuperators.

Gas Fuel Popular with the Manufacturers in the Chicago Territory

WE are indebted to Mr. H. H. Clark, Industrial Gas Engineer of the Public Service Company of Northern Illinois, Chicago, for the photographs

showing industrial fuel installations on a large scale in the Chicago territory.

Figure 1 shows a general view of the plant of the Buda Company at Harvey,



Fig. 1.



Fig. 2.

Illinois, the largest manufacturers in the world of the most complete line of railway and track appliances, such as gasoline motor cars, inspection cars, hand cars, push cars, jacks, track drills, pumping posts, railway crossing gates, electric head lights, etc. This company is also one of the largest manufacturers of heavy duty automotive engines for trucks, tractors, gasoline locomotives and pleasure cars. They also manufacture a most complete line of special track work such as frogs, switches, crossings, rail braces, switch stands, etc., for both steam and electric railway companies.

used for practically every heating operation. The wonderful progress made since then not only indicates the economic value of gas as a fuel but also shows what can be accomplished by a progressive public utility company.

Figure 2 is a section of the core room at the Buda Company, showing three medium size core drying ovens. These ovens are 12 feet wide, 20 feet long and 9 feet high. A total of 16 core ovens are now gas fired at this plant. The burners are of the fan blast type, supplied by two manifolds placed on either side of the oven. The air for each manifold is



Fig. 3.

In the Buda plant gas is used for thirty different processes, including metal melting, annealing, brazing, carbonizing, core baking, forging, japanning, motor testing and heat treating, etc.

Four years ago when a survey of the Buda plant was made by Mr. W. A. Ehlers, Industrial Engineer of the Association staff, it was found that coke was

furnished by a fan motor blower.

Figure 3. A three compartment carbonizing furnace at the Buda Company showing arrangement of gas and air piping for front burners. A similar set of burners is placed at the rear of this furnace and two burners furnish the gas for each compartment.

MANUFACTURERS SECTION

W. GRIFFIN GRIBBEL, Chairman

GEORGE S. BARROWS, Vice-Chairman

W. W. BARNES, Secretary

MANAGING COMMITTEE — 1920

At Large

BARNES, W. W., New York, N. Y.
BARROWS, GEORGE S., Providence, R. I.
BRILL, A. P., Pittsburgh, Pa.
BRUCE, HOWARD, Baltimore, Md.
COLLINS, D. J., Philadelphia, Pa.
CONROY, J. F., New York, N. Y.
CRANE, WM. M., New York, N. Y.
DEHART, J. S., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
HUTCHINSON, W. P., Bridgeport, Conn.
LOHMEYER, H. B., New York, N. Y.
MASON, SIDNEY, Gloucester, N. J.
NORTON, HARRY A., Boston, Mass.
PEFFLY, IRVING W., New York, N. Y.
REES, RICHARD, Kalamazoo, Mich.
ROBERTS, EARL W., Detroit, Mich.

ROPER, GEO. D., Rockford, Ill.
SCHALL, H. D., Detroit, Mich.
STITES, TOWNSEND, Gloucester, N. J.
WICKHAM, LEIGH, St. Louis, Mo.

Representing Affiliated Societies

BARCOCK, C. B., San Francisco, Cal. (Pacific Coast)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
CHAFIN, C. H. B., New York, (Empire State)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
HOWAMON, G. M., Atlanta, Ga. (Southern)
LONG, H. J., New Brunswick, N. J. (New Jersey)
McCULLOUGH, CHAS., Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
SEIDENGLANE, C. H., Dallas, Texas. (So. Central)
SCHALL, H. D., Detroit, Mich. (Michigan)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Membership—WM. M. CRANE, New York, N. Y.
Apparatus Makers—D. J. COLLINS, Philadelphia, Pa.
Nomination—WM. M. CRANE, New York, N. Y.
Exhibition—W. GRIFFIN GRIBBEL, Philadelphia, Pa.
Illustrated Lectures—GEORGE S. BARROWS, Chairman
Division of Meter Manufacturers—DONALD McDONALD, Chairman, W. P. HUTCHINSON, Vice-Chairman
Division of Gas Range Manufacturers—WM. M. CRANE, Chairman, I. W. PEFFLY, Vice-Chairman
Division of Water Heater Manufacturers—H. J. LONG, Chairman
Division of Office Labor Saving Devices Manufacturers—H. B. LOHMEYER, Chairman, E. J. FERRIS, Vice-Chairman

Division of Heating Appliance Manufacturers—GEO. S. BARROWS, Chairman
Division of Industrial Appliance Manufacturers—S. TULLY WILLSON, Chairman
Division of Lighting Appliance Manufacturers—J. P. CONROY, Temporary Chairman
Division of Apparatus & Works Manufacturers—J. S. DEHART, JR., Temporary Chairman
Division of Supply Manufacturers—R. MUELLER, Temporary Chairman
Division of Accessories Manufacturers—B. RYAN, Temporary Chairman

"Success waits upon ability and loyalty, Let's go!"—Geo. B. Cortelyou

Company Member



The Seal of

STANDARD PRODUCT AND ASSOCIATION SUPPORT

All company members, Manufacturers Section, are urged to use the above emblem on all stationery, catalogues and literature as company members of this Association.

Publicity's the Thing

In perusing the issues of the *Saturday Evening Post* it is very interesting to observe the national advertising indulged in by a number of our Company members in bringing their product before the public.

The gas range is prominently brought to the attention of the consuming public by means of group publicity by one Holding Company, intelligently explaining one of the features of their manufacture.

In this same issue, the manufacturers of Dutch Cleanser, call attention to the gas range in the use of their product which can be quickly and easily cleansed by it as it cuts the spattered grease from ovens, drip pans, enameled splashes, etc., featuring these uses with all other general housework requiring such a cleanser.

Combination ranges are also prominently displayed by another western manufacturer. From reports received from three Company members of the Association, manufacturing this type of range, it is evident that the demand is increasing, as they have sold 12,670 combination ranges valued at \$885,800 during the year 1919. Gas range manufacturers not aware of the demand for this type of range should take advantage of it and secure a share of this business.

Water heater manufacturers are not only using the periodicals as a medium for reaching the "unsold market" but in a number of cities, extensive campaigns of advertising have been carried on in the daily press with very encouraging results.

A manufacturer of a gas ironing machine is also taking advantage of this form of publicity with equally good results.

It is very encouraging to note the increase in the advertising of gas appliances as compared with that done in former years and the prediction has been made that to do justice to appliances worthwhile, a campaign of education through advertising mediums of this kind will be productive of good results.

200 Strong

Concerning Our Membership Campaign

Honor Roll

GEORGE W. PARKER,	—	11 Manufacturer Company Members
CLARENCE H. FRENCH,	—	1 Manufacturer Company Member
RICHARD REES,	—	1 Manufacturer Company Member
H. A. NORTON,	—	1 Manufacturer Company Member
J. B. KLUMPP,	—	1 Manufacturer Company Member
HEADQUARTERS,	—	11 Manufacturer Company Members
H. J. LONG,	—	1 Manufacturer Company Member
CHAS. T. AARON,	—	1 Manufacturer Company Member

A canvass of the Membership Committee recently developed the fact that many companies enjoying a revenue from the gas industry and benefiting by the Association's work are slow to be convinced that it is to their best interest to become affiliated in membership in the Association which stands for the industry. The dues which are based on the revenue derived from the gas business

for a fiscal year are very small in comparison with the great benefits obtained from membership in the Association. It is well at this time to have it understood that by action of the Executive Board, Manufacturer Companies taking out membership after April 1, the beginning of the second-half of our fiscal year are assessed for six months dues rather than the whole year, except in the case of new

members who desire to exhibit at the Convention and Exhibition, who are required to pay a full year's dues in order to be on equal footing with all other exhibitors.

In the last issue of the MONTHLY, an appeal was made for the active co-operation on the part of our manufacturer company members in behalf of our Membership Campaign and this appeal is again set forth to make an earnest effort to reach our goal of **300 members before the close of our fiscal year.**

THE EXHIBITION!

It is encouraging to state that to date 76 booths have been closed by contract for the Second Annual Convention and Exhibition to be held November 15 to 20 at the Hotel Pennsylvania, New York City and it is predicted that the Exhibition will be closed in its entirety before August 15 at the rate the applications are being received.

The applications to date confirm the prediction that the Exhibition will be more varied in the character of its exhibits than in former exhibitions and as indicated by the list of exhibitors, a number of companies will be found who have not exhibited before. It is safe to assume that the demonstration of their products will prove most interesting to the visiting delegates.

In the past few years, gas lighting has not received the attention it deserves and a special effort is being made by the Division of Lighting Manufacturers in conjunction with the Lighting Committee of the Commercial Section to have at this year's Exhibition an exhibit of lighting fixtures which will do justice to the trade.

Commercial men visiting the Exhibition are strongly advised to give every encouragement to the lighting fixture

manufacturers exhibiting in tangible orders wherever possible in order that the effort expended on their part for the development of new lighting units to meet popular demand may produce the result for which they are working.

Exhibitors to Date

Young Brothers Co.
B. Ryan Co.
Humphrey Co. Div.
Will W. Barnes
The Baltimore Gas Appliance & Mfg. Co.
General Gas Appliance Co.
Quick Meal Stove Co. Div.
The Crandall Pettie Co.
New Process Stove Co. Div.
Welsbach Co.
The Michigan Stove Co.
Barnett Foundry & Machine Co.
Ruud Manufacturing Co.
Famous Oven Manufacturing Co.
The Kompak Co.
Hugo Manufacturing Co.
Reliable Stove Co.
William M. Crane Co.
Walker & Pratt Mfg. Co.
Roberts & Mander Stove Co.
George D. Roper Corp.
General Gas Light Co.
A-B Stove Co.
Reznor Mfg. Co.
The Ofeldt Gas Fired Boiler Co., Inc.
Detroit Stove Works
Union Stove Works
Pittsburg Water Heater Co.
Weir Stove Co.
Royal Art Glass Co.
George M. Clark & Co. Div.
The Cleveland Heater Co.
The Improved Appliance Co.
Rathbone, Sard & Co.
The Estate Stove Co.
Burroughs Adding Machine Co.
The Lattimer Stevens Co.
The Cutler-Hammer Mfg. Co.
The Sprague Meter Co.
The Koppers Co.
S. R. Dresser Mfg. Co.
Precision Instrument Co.
Connelly Iron Sponge & Governor Co.
Pittsburgh Meter Co.

The Roberts Brass Mfg. Co.
 Quigley Furnace Specialties Co.
 Republic Flow Meters Co.
 Equitable Meter Co.
 John J. Griffin & Co.
 The Surface Combustion Co.
 The Eclipse Stove Co.
 Robertshaw Manufacturing Co.
 The Milwaukee Gas Specialty Co.
 The G. S. Blodgett Co.
 Grinnell Co., Inc.
 The A. H. Wolff Gas Radiator Co.
 James B. Clow & Sons
 The Bryant Heater & Mfg. Co.
 The J. H. Grayson Mfg. Co.

National Stove Co.
 Underwood Typewriter Co.
 Bacharach Industrial Instrument Co.
 United Lead Co.
 The U. G. I. Contracting Co.
 National Tube Co.
 American Meter Co.
 Metric Metal Works
 The Western Gas Construction Co.
 The DeMatteis Broiler System Co., Inc.
 Johnson Gas Appliance Co.
 Monroe Calculating Machine Co.
 J. B. Slattery & Bro., Inc.
 Comstock Castle Stove Co.
 Charles A. Hones, Inc.

A New Device

A stove lighter has recently been patented which will prove a boon to the housewife. Attached to the manifold of the gas range, it is operated by turning on the gas which is lighted by the friction in the lighter, producing a long flame thus permitting the top or oven burners

being lighted as required. No pilot light is used. After lighting the burner the gas supply is extinguished, this overcomes the clogging of pilot lights and the burning out of pilot lights so prevalent in other forms of lighters.

The Toiler—New Style

Well, sport, we got our raise to-day;
 The old man came across. Soft, hey?
 Ain't we just had one raise? Well, kid,
 It makes no difference if we did.
 We got the thumbscrews on 'em, brother,
 An' one good turn deserves another.
 How d' ye suppose the workin' class
 Is goin' to pay fer oil an' gas?
 Ain't we been doin' mighty well?
 Yes, mebbe so, some ways; but, hell,
 Ye gotta think o' this thing, neighbor—
 They're makin' too much on our labor!
 An' our job is confinin', too;
 'Twas three p. m. when I got through.
 I guess I'll saunter down the line.
 Have I a garden? None for mine!
 That garden stuff is in yer eye—
 We find it's easier to buy.
 Come on around and shoot some pool.
 Ye can't? All right—then work, ye fool!

—AGRICOLA STRONG.

TECHNICAL SECTION

L. R. DUTTON, Chairman

H. W. HARTMAN, Secretary

W. S. BLAUVELT, Vice-Chairman

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At Large

BLAUVELT, W. S., Terre Haute, Ind.
 CASTOR, W. A., Philadelphia, Pa.
 CHUBB, C. N., Davenport, Iowa.
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 CONGDON, R. C., Atlanta, Ga.
 DUTTON, L. R., Jenkintown, Pa.
 EARNshaw, E. H., Newark, N. J.
 FIELDNER, A. C., Pittsburgh, Pa.
 FORSTALL, WALTON, Philadelphia, Pa.
 FULWEILER, W. H., Philadelphia, Pa.
 HAFTENKAMP, J. P., Rochester, N. Y.
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 MACBETH, G. T., Mt. Vernon, N. Y.
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 WEBER, F. C., New York, N. Y.
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 CHAPIN, C. H. B., New York, N. Y. (Empire State
 G. & E.)
 CHUBB, C. N., Davenport, Ia. (Iowa)
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 HART, J. G., Waukegan, Ill. (Illinois)
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 JONES, E. C., San Francisco, Cal. (Pacific Coast)
 JONES, JACOB B., Bridgeton, N. J. (New Jersey)
 LYONS, B. F., Beloit, Wisc. (Wisconsin)
 NEAL, GEO. A., Hammond, Ind. (Indiana)
 PAIGE, C. E., Worcester, Mass. (N. E. Gas. Eng.)
 SEDBERRY, W. H., Marshall, Tex. (South Central)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Carbonization—J. P. HAFTENKAMP, Rochester, N. Y.
Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.
Chemical—E. C. UHLIG, Brooklyn, N. Y.
 Vice-Chairman, R. B. HARPER, Chicago, Ill.
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Purification—C. H. STONE, Rochester, N. Y.
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 Vice-Chairman, GEO. WHERLE, Denver, Colo.
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Disposal of Waste from Gas Plants—L. J. WILLIEN, Boston, Mass.
Electrolysis—L. A. HAZELTINE, New York, N. Y.
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Gas Works Auxiliaries—C. N. CHUBB, Davenport, Ia.
 Vice-Chairman, R. A. CARTER, JR., New York, N. Y.
Nomenclature—O. E. NORMAN, Chicago, Ill.
Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.

Important Notice To Technical Section Members

THE meeting of the Executive Committee, Technical Section, at Association Headquarters June 30, carefully discussed the method of distributing papers and reports to members for the 1920 Convention. As abstracts only will be presented at the Convention technical men will realize the importance of securing copies of papers and reports in which they are interested in advance of the meeting.

It has been decided to prepare and forward to all members a postcard or form letter listing the papers and reports to be submitted at the various sessions of the Convention as soon as the complete program is decided upon. Members will be requested to check the material in

which they are interested and return the letter or postcard to Association Headquarters. The papers and reports checked will then be forwarded to them as soon as printed.

This will insure each member receiving *only* the material he is interested in and will enable members to intelligently discuss the abstracts as presented at the meeting. We wish to urge our members on receipt of this notification to check the items in which they are interested and return the notice promptly to Association Headquarters.

Plans were also consummated for securing three or four timely technical papers for the 1920 Convention.

(Continued on page 515)

Method of Making Branch Connections from Existing Cast Iron Mains

H. B. ANDERSON, Philadelphia, Pa.

The methods of creating a branch outlet for a proposed cast-iron main, in an existing cast-iron main, are by means of (1) the insertion of a 2 bell tee and solid sleeve, (2) the installation of a hub sleeve, and (3) the installation of a hat flange. Generally speaking the special castings for this purpose listed in the A. G. I. Specifications adopted in 1913, are designed with the idea that Method No. 1 is used when the size of the proposed main is nearly as large as that of the existing main, and whenever the size of the existing main is 8" or smaller; Method No. 2 when the size of the proposed main is comparatively small as regards the existing main, but when the strength of the existing main is not sufficient for the installation of a hat flange; and Method 3 when the size of the proposed main is comparatively small, and when the existing main is sufficiently strong for the hat flange installation. The minimum and maximum sizes of the standard special castings are shown in the following table:

Method No. 1 requires for all size mains a relatively long excavation completely surrounding the main; for small mains, drilling two bagholes, and for large mains four bagholes; cutting the main at two points, completely around, or nearly so; in some instances bypassing around the cut; and finally breaking out a section of main and installing the special casting, including the making of three joints.

Method No. 2 requires a much shorter excavation completely surrounding the main than Method No. 1; cutting out a piece from the existing main to create the outlet; installing the hub sleeve with its two flanged joints and two end joints and the short piece from the branch outlet including one or two bagholes; and finally punching out the piece in the side of the existing main.

Method No. 3 requires only sufficient excavation to expose a reasonably large surface of the existing main at the spot where the hat flange is to be installed;

SPECIAL CASTINGS IN A. G. I. SPECIFICATIONS.

Size existing main inches	Size of branch outlet					
	Tee or cross		Hub sleeve		Hub flange	
	Max.	Min.	Max.	Min.	Max.	Min.
48	48	16	—	—	12	6
42	42	16	—	—	12	6
36	36	12	—	—	12	6
30	30	8	—	—	12	6
24	24	8	—	—	12	6
20	20	6	10	6	12	6
16	16	6	8	6	—	—
12	12	4	6	4	—	—
10	10	4	6	4	—	—
8	8	4	—	—	—	—
6	6	4	—	—	—	—
4	4	4	—	—	—	—

cutting out the piece in the existing main; drilling and tapping the bolt holes, and installing the hat flange with its one flanged joint; installing the short piece from the branch outlet including one or two bagholes; and finally punching out the piece in the side of the existing main.

It is futile to speculate on the desirability and possibility of using these methods differently than at present, unless there is a reasonable demand for the castings which now can be used for creating an outlet in a main. Although installations of large mains usually are planned to include outlets at strategical points, a new outlet sometimes must be created. On smaller mains the occasion arises frequently. Consequently it is believed that there is a reasonable demand for the castings included in the present specifications.

Assuming for the minute that special castings existed for each method and for all size mains; then, if one were to lay down a table showing the methods most desirable to use from the standpoint of economy, it is quite probable that Method No. 2 or Method No. 3 would displace Method No. 1 for a number of connections for which the latter is at present commonly used. As a starting point, let us assume that the hat flange connection could be used on mains 20" and larger, for creating a branch outlet of a maximum size about one-half the nominal diameter of the existing main; and the hub sleeve connection on all mains 6" and larger, for creating a branch outlet of a maximum size one size smaller than the diameter of the existing main. Also let us assume, for the sake of simplicity, that only one special casting for each size existing main would be provided, this special having the outlet of the maximum size, with the idea that reductions in this outlet size would be made with bushings, which also would require designing, as the necessary sizes for such purposes are

not included in the A. G. I. Specifications.

On this basis the following additional special castings would be required:

Hat Flanges

48 x 24	36 x 16
42 x 20	30 x 16

Hub Sleeves

48 x 42	16 x 12
42 x 36	12 x 10
36 x 30	10 x 8
30 x 24	8 x 6
24 x 20	6 x 4
20 x 16	

These outlet sizes represent the maximum size outlet which should be furnished. Smaller sizes could be provided for if necessary, or reduction made by means of a bushing or reducers.

An increased use of hub sleeves and hat flanges on large mains, would not in any one situation, result in any great annual saving, but under certain conditions, especially when the present method of a "cut out" is required with the consequent shutting off of gas flow and the necessity of a bypass installation, it might easily be of immense benefit.

One of the assumptions on which was based the previous table of additional castings was that the hub sleeve principle could be used on all mains 6" and larger, for creating a branch outlet one size smaller than the diameter of the existing main. The principal reason preventing the hub sleeve from being provided with an outlet of a size equal to that of the existing main is the fact that the piece of the existing main which is to be driven in after the flange has been installed would not enter the space within the pipe. This is true, but if the diameter of the piece to be driven in were slightly smaller than that of the diameter of the pipe, this objection would probably be overcome, and the capacity of the outlet would not be reduced to any appreciable

(Continued on page 515)

Research in Electrolysis*

**(Editor's Note)—The above extract from a statement published in April, 1920, by the American Committee on Electrolysis is reprinted for the information of our members. The A. G. A. Committee on Electrolysis is actively cooperating with the Research Sub-Committee and desires that member companies afford the committees all assistance in their power.*

PRIOR to the formation of the American Committee on Electrolysis, there had been two important efforts to reach a general solution of the stray current electrolysis question. In Germany, a joint committee was formed in 1906 from members of the technical societies representing the principal interests concerned. This committee published a report in 1910 which contained much valuable material, but many of the conclusions have not been directly applicable to American conditions. The U. S. Bureau of Standards, in America, undertook the investigation of certain phases of the electrolysis problem in 1910, and has since then made important contributions to the subject. These reports did not, however, provide a complete solution of the problem satisfactory to all concerned, and there still remained the stubborn fact that an agreement did not exist on fundamentals.

In recognition of this situation, and on the initiative of a few prominent engineers, the American Committee on Electrolysis (first known as the "Joint National Committee on Electrolysis") was formed. This Committee is made up of twenty-seven engineers, three from each of the following organizations: American Electric Railway Association, American Gas Association, American Institute of Electrical Engineers, American Railway Engineering Association, American Telephone and Telegraph Company, American Water Works Association,

United States Bureau of Standards, National Electric Light Association, Natural Gas Association of America.

The first meeting of the American Committee on Electrolysis was held in May, 1913. (Mr. Bion J. Arnold of Chicago was elected Chairman and Dr. E. B. Rosa of the Bureau of Standards, Washington, Secretary.) The purpose of the Committee was to secure a sound and reasonable solution of the electrolysis problem. As a necessary preliminary to this object and for the information of the member organizations, the Committee prepared a report which was printed in 1916. This report contains statements of fact upon which unanimous agreement could then be obtained and was entitled, "A Preliminary Report Prepared for Submission to Its Principals by the American Committee on Electrolysis—1916." This report has been published by the American Institute of Electrical Engineers and reprints of it may be found in the transactions of many of the national societies.

Realizing that generally accepted conclusions could only be reached after further investigation, the American Committee on Electrolysis appointed the Research Sub-Committee and instructed it to take up the active study of this subject in co-operation with the Bureau of Standards.

The personnel of the Research Sub-Committee includes one member from each of the organizations represented on the main committee whose properties are directly concerned. In addition, experts more actively engaged in electrolysis investigation, were appointed by some of these organizations. The membership of the Research Sub-Committee at present is as follows:

<i>Members</i>	<i>Experts</i>	<i>Properties Represented</i>
E. E. Minor	L. A. Hazeltine	Water Supply Systems
Philip Torchio	Alexander Maxwell	Power Cables
E. B. Katte		Electrified Steam Railways
L. P. Crecelius	V. B. Phillips	Electric Street Railways
S. S. Wyer		Supply Systems for Natural Gas
H. C. Sutton, Secy.	W. H. Fulweiler	Supply Systems for Manufactured Gas
H. S. Warren, Chairman	Elam Miller	Telephone and Telegraph Cables

In addition to Dr. Rosa, Chief Physicist, the following engineers of the Bureau of Standards are actively co-operating with the Research Sub-Committee: Burton McCollum, Electrical Engineer; E. R. Shepard, Electrical Engineer; K. H. Logan, Associate Electrical Engineer.

The first active work of the sub-Committee was done in October, 1919, when an important investigation was made in a western city. During the winter months, work was done in a southern city. At the present time, important investigations are being made in four western cities, and arrangements are being made to visit other places during the summer. In addition to the studies made directly by the Research Sub-Committee, information is being collected through the organizations represented on the American Committee on Electrolysis. For example, certain questions of particular importance to the gas industry have been referred to the American Gas Association, the subject of the heating of power cables by stray current flowing on the sheaths has been referred to the National Electric Light Association, and several questions requiring laboratory study have been referred to the Bureau of Standards.

The salaries and traveling expenses of the engineers conducting this research and the necessary instruments and apparatus are all provided by the Research Sub-Committee and the Bureau of Standards, so that the utilities in cities where investigations are conducted will not be asked to contribute to the expense other

than in the form of ordinary street labor for excavations and similar work. The services of junior technical assistants from local utilities however, will always be welcomed as this is mutually advantageous to the Sub-Committee and the utilities supplying such service.

At the beginning of their co-operative work, the Research Sub-Committee and the Bureau of Standards adopted a policy to which they have since adhered, to the effect that they are solely concerned with the accumulation of facts leading to the establishment of principles upon which conclusions and recommendations may ultimately be based.

As long as it is understood that the Sub-Committee is concerned only with facts, and that it will not make recommendations, or publish conclusions which might embarrass one or another of the local utilities, or otherwise enter into local controversies, it feels that it may with propriety request facilities for investigation at any place likely to yield results, or that it may confidently propose participation in private investigations for the sake of the facts involved. These facts may, for example, be whether or not a particular subsurface structure has suffered or is suffering electrolytic corrosion, or whether or not stray electric currents exist at a particular place. Such facts are disclosed only to the interested local parties and then are held confidentially for the use of the Sub-Committee.

General conclusions cannot properly be drawn from data obtained by a small number of investigations and it is of first

importance that many places and a variety of conditions be studied. For this reason, the Research Sub-Committee hopes to obtain co-operation from local utilities in places where it appears that study might yield useful contributions to the subject. This is with the understanding that the Sub-Committee will communicate such facts as may be established by its studies to the interested local parties, but will in no case advance opinions, offer suggestions for changes, or make recommendations in local questions. Before undertaking an investigation in any city, assurance of the co-operation or at least the approval of all the local utilities is necessary because the Research Sub-Committee, representing as it does, all the different interests, must remain scrupulously impartial in respect to any local controversies. Moreover, at present, and until such time as the necessary facts by which conclusions may be properly established are available, the Research Sub-Committee proposes to maintain an open-

minded attitude in respect to all phases of the electrolysis problem.

The importance of obtaining exact and unbiased data on the fundamental questions involved cannot be overestimated, as upon this depends the possibility of ultimately stating in authoritative terms, the nature and magnitude of the difficulty, and formulating the rules and recommendations which will provide a basis for solving this problem. Any inquiries or other communications concerning the work of the Research Sub-Committee of the American Committee on Electrolysis should be addressed to its Chairman, Mr. H. S. Warren, 195 Broadway, New York City.

AMERICAN COMMITTEE ON ELECTROLYSIS.

BION J. ARNOLD, *Chairman*,
105 South LaSalle St.,
Chicago, Ill.

E. B. ROSA, *Secretary*,
U. S. Bureau of Standards,
Washington, D. C.

Cement Joint Practice

In the February issue (page 113) and again in April (page 268), cement joint practice was discussed in the light of the paper read by Mr. W. M. Henderson in September, 1919, before the Pacific Coast Gas Association. Mr. Henderson stated that the practice of using neat cement was not proper, and he advocated a cement and sand mixture. His objection to neat cement was based on its rise in temperature as shown by certain army experiments. On January 17, his attention was called to the great difference between the conditions under which the army tests were conducted and those surrounding cement joints in cast iron bells. No reply has as yet been received. So much for the objection to the use of neat cement.

Now as to the argument for the use of cement and sand. Mr. Henderson stated that this was the New England method of 40 years ago. Inquiry of the New England Association of Gas Engineers has failed to discover any present-day gas engineer who ever heard of cement and sand, neither were any answers received to the request for experience with such a joint, addressed to the members of the American Gas Association in the February "MONTHLY."

It would seem from the above that the case for cement and sand as based on years of successful practice, had *not* been made out, and that its use in place of neat cement would be distinctively a case of preferring a comparatively untried method to a standard practice successfully used for many years.

RECENT ARTICLES IN CHEMICAL PRESS OF INTEREST TO GAS MEN

Contributed by Sub-Committee on Abstracts* of the Chemical Committee

ETHYLENE AND PROPYLENE CHLOROHYDRINS AND GLYCOLS FROM OIL GAS. By Benjamin T. Brooks, *Chemical and Met. Eng.*, Vol. 22, No. 14, 629-33 (April 7, 1920). Experimental work and results on the synthesis of glycols from oil gas by means of hypochlorous acid. The glycols are used as a substitute for glycerine and for other purposes. (David L. Jacobson.)

IMPROVED APPARATUS FOR DETERMINING LIGHT OIL IN GAS. By E. H. Bird, *Chemical and Met. Eng.*, Vol. 22, No. 15, 705-6 (April 14, 1920). Description of testing apparatus developed by The Koppers Company for determining light oil in coal gas, etc. The apparatus is portable and adapted to field tests. Using proper amounts of gas, a high scrubbing efficiency is attained. (David L. Jacobson.)

PEAT AS A POSSIBLE SOURCE OF INDUSTRIAL POWER. By Herbert Phillip, *Chemical and Met. Eng.*, Vol. 22, No. 15, 693-6 (April 14, 1920). The peat deposits of the United States, and the growth of the peat industry are described; methods of excavating the peat and its use as a boiler fuel. Peat can be used successfully in gas producers; and in by-product gas producers large yields of ammonium sulphate can be recovered. (David L. Jacobson.)

DETERMINATION OF CARBON IN TAR. By H. L. Waterman and F. H. C. Barkhuysen, *Chemical Abstracts*, Vol. 14, 217 (Jan. 20, 1920). (E. J. Murphy.)

EFFICIENCY OF BOILERS AND POWER DISTRIBUTION FOR GAS WORKS. By W. H. Postleth-

waite, *Gas World*, Vol. 71, 260-1 (1919). A discussion of the general methods used for generating and distributing power in gas works. (E. J. Murphy.)

EXAMINATION OF WATER IN TARS. By Arnold Philip, *Gas World*, Vol. 71, 17-19 (1919). The author claims to have a method which will detect so small an amount as 0.01% of water in tar. (E. J. Murphy.)

AN INVESTIGATION INTO THE COMPOSITION OF THE UNSATURATED HYDROCARBONS IN COAL GAS. By F. S. Sinnatt and L. Slater, *The Analyst*, Vol. XLV, 85 (1920). The authors absorbed the unsaturated hydrocarbons from coal gas (Manchester) by aspirating it at the rate of 10 liters per hour through a series of three wash bottles containing bromine—the first test covered a period of 10 days, the second 3 weeks; from 9 to 5 daily. The bromic compounds thus obtained were identified by distillation under reduced pressure with the following results:

	First expt. Per cent. by volume	Second expt. Per cent. by volume
Ethylene	83.8	84.3
Propylene	13.4	11.8
Butylene	1.7	2.3
Amylene	1.0	1.5

The discussion which followed was rather unfavorable.

SOME GAS WORKS PROBLEMS AND THEIR SOLUTION. By R. A. S. Browning, *Gas World*, Vol. 71, 369-70 (1919). (E. J. Murphy.)

* Abstractors' names appear in brackets following each item.

(Continued from page 511)

extent. If, in addition, this piece were cut so that it could be driven in, in two pieces, the objection would certainly be overcome.

The writer is employed in a situation where new main extensions are ordinarily of 6" and many are made from existing 6" mains. He believes that it would be possible to install a 6 x 6 hub sleeve (hole in existing main 5" in diameter) at a cost both for labor and for material which would be less than the

present method of installing a 6" x 6" tee and a 6" solid sleeve.

Criticism and suggestions are invited on every phase of the subject with which this article treats.

(Continued from page 509)

The Committee program covers a wide range of technical activities and notwithstanding the additional burdens which present operating conditions have placed on the Committee personnel every effort will be made to have reports ready for distribution shortly.

A Summary of Commission Rules and Regulations on the Subject of Main Extensions

ALABAMA: Public Service Commission: has no rules governing extensions of gas mains.

ARIZONA: Corporation Commission has not issued any general rules covering the extension of gas service, but the Commission approves rules of companies stating the number of feet of extension they furnish free. The following is a copy of such a rule of the Pacific Gas & Electric Company.

Rule 32. Extension of Gas and Electric Mains. When permanent use is reasonably assured, the Company will construct gas and electric extensions to its mains and lines free of cost to the consumer, when the estimated normal annual gross revenue from the extension equals one-half of the cost of the main or line and transformers (exclusive of service and meter). When the estimated cost of the extension is more than twice the estimated annual gross revenue, the extension will be built, provided the consumer deposits with the Company the cost of construction. The Company will make refund to the consumer as follows:

1. Immediately upon execution of agreement, two dollars for each dollar of estimated normal annual revenue to be secured from said extension.

2. In January of each year two dollars for each dollar of normal annual revenue received from the extension during the previous twelve months, less the amount of any refunds theretofore made to the consumer, and less depreciation of five per cent. per year from date of installation on that portion of investment covered by deposit. No deduction shall be made for depreciation prior to five years from date of installation.

The above rule applies to extensions costing \$300 or less.

CALIFORNIA: *Deposits or Prepayments to Obtain Service.*

- (a) No gas utility shall require from any consumer or prospective consumer a deposit or prepayment intended to pay for all or any part of the cost of an extension or installation of service except under rules and regulations approved by the Commission, and set down in the public schedules on file with the Commission and open to public inspection at each office or location where applications for service are received.

Main Extensions.

- (a) Each gas utility shall make at its own expense, unless relieved from the obligation by the Commission where par-

ticular conditions may require a special ruling, such street extensions within the corporate limits of any city and county, or city or town, as may be necessary to supply any bona fide applicant for service.

- (b) No gas utility shall be relieved from the duty or obligation of making at its own expense extensions required to serve individual consumers, or group of consumers in the same neighborhood, on the ground merely that such extension, if made at the sole expense of the utility, would be unprofitable or less profitable than the average resulting from the operation of the utility, nor shall all or any part of the cost of any such extension along any public street, highway, alley, lane or road be otherwise assessed against a prospective consumer, or group of prospective consumers, except where the revenue to be derived from the proposed extension will be less than the actual additional cost to serve, and or where the making of the extension at the sole expense of the utility would work an undue hardship upon it or its then existing consumers, in which case approval of a modification of the general requirement shall be obtained from the Commission.

- (c) If an extension required in order to furnish the service does not come within the class which will be made entirely at the expense of the utility, the utility may require a deposit of the actual cost of the necessary extension, above the free limit, and shall in such case refund an amount equal to the cost of an extension which would be normally made at the expense of the utility for each additional consumer whose service shall be taken off the first extension within a period of ten years for bona fide applicants or seven years in case of real estate subdivisions from the making of the first extension, but in no case shall the refund exceed the original deposit.

- (d) Subject to the approval of the Commission, a bona fide applicant for service may have the option of making a guarantee for a definite minimum payment in lieu of complying with Rule "C" herein, in which case the utility shall make the entire extension at its sole cost.

- (e) Extensions upon private property, where good and sufficient right of way to the point of service and beyond to the premises or property of other persons or to a public street, highway, alley, lane or road, by the shortest practicable route, is secured by the utility or by any applicant on behalf of the utility, and where service to others than the first applicant

can be supplied from such total extension under conditions substantially similar to those existing in connection with extensions along public streets, highways, alleys, lanes or roads shall be made under the same conditions as herein provided for extensions along such public streets, highways, alleys, lanes and roads.

(f) No existing practice of any gas utility, with relation to the extension of lines either upon public streets, highways, alleys, lanes or roads, or upon private property more favorable to the consumer than would be extensions made under these rules, shall be abandoned or altered in any respect except upon a showing before the Commission that a change in such practice is justified.

COLORADO: Public Utilities Commission: has formed no rules governing the extension of mains but desires that each utility file its practice regarding extensions.

CONNECTICUT: Public Utilities Commission: has no rules. Gas, Water and Electric cases are treated on merits presented in evidence at hearing and dependent upon number of consumers, prospect of development and anticipated revenue.

DELAWARE: Public Utilities Commission reports no rules governing the extension of mains. Authority where it exists in this regard, is exercised by the municipality.

DISTRICT OF COLUMBIA: Public Utilities Commission: adopted rule Oct. 28, 1914. Extend without cost 125 ft. per house. If over 125 ft. from end of main deposit required of 75¢ per ft., without interest—deposit to be returned at rate of \$93.75 (amount for 125 ft.) for each additional house served from the extension until entire amount of deposit has been returned. This rule does not require extension in streets not at or near established grade nor prohibit extension by company. Service connection, main to meter $\frac{1}{2}$ cost by company $\frac{1}{2}$ cost by consumer.

Dec. 10, 1919, upon petition and hearing rate changed from 75¢ per ft. to \$1.75 per ft.

GEORGIA: Railroad Commission: has no state rule. Generally speaking in distances not exceeding 200 ft. Commission requires extension without cost to new consumers. Where demand is insufficient to justify expense or distance too great Commission apportions expense between customer and company.

IDAHO: Public Utilities Commission: has no rules governing extension of mains. Each case considered on question of cost and probable revenue.

ILLINOIS: (a) *Definitions.*—For the purpose of this rule, a high pressure system shall be taken to mean one in which the gas is carried at a pressure of two pounds or over per square inch to the consumer's premises where a service governor is installed to obtain a reduced pressure on

such premises. A low pressure system shall mean a system in which the consumer's service is connected directly to a main carrying less than two pounds per square inch water pressure.

A "free extension" as used in this rule shall consist of a street main extension whose entire length is not greater than that obtained by allowing 100 feet per consumer for a low pressure system and 200 feet per consumer for a high pressure system.

(b) *Deposits Required from Prospective Consumers.*—Gas utilities shall require a deposit from applicants for gas service in cases where the rendering of such service would require extensions of the street gas mains. Such a deposit shall be required in the amount of the cost of such construction, but such cost shall not include any amount for gas meters or for gas service connections except as such connections may have been regularly charged for heretofore in accordance with the rules and practices of each individual utility as filed with this Commission. Service shall be rendered to any consumer complying with these deposit conditions unless an individual case is of such a character that it appears that the revenues anticipated from the extension will not provide at the expiration of five (5) years an adequate return upon its cost.

(c) *Repayment of Deposits.*—Repayment of the deposits collected shall be made in monthly amounts of not less than twenty-five (25) per cent. of the net bills for service. Such monthly repayments shall be initiated with the first bills for service rendered. The practice of the utilities as regards the repayment of deposits collected for construction which is in excess of the "free extension" defined hereinabove shall not be changed.

The Commission reserves the right to order the repayment to consumers of the then existing balances of deposits collected representing the cost of the free extensions at such time as the Commission may hereafter designate.

(d) *Payment of Interest upon Deposits.*—Interest at the rate of five (5) per cent. per annum shall be paid upon those portions of the deposits currently held by the utilities which are represented by the cost of a "free extension" as defined hereinabove until such time as the repayment shall have amounted to the total cost of such "free extension." In computing the interest due, in order to avoid the complication of interest computations on varying amounts, such interest after repayments have been started, may be computed over the entire remaining period upon one-half of the gross amount which is to be repaid.

(e) *Additional Consumers.*—In case within ten (10) years from the date of

installation of the extension, additional consumers are to be served from an extension which has been made under these rules and for which a deposit has been collected in excess of the cost of the "free extension," then such additional consumers shall each be required to make a deposit in the amount of the cost of a "free extension" and the deposits made by such additional consumers shall immediately be paid to the consumers who made the original deposit and applied to the extinguishment of the same. When the deposits so collected from such additional consumers shall have amounted to the cost of that portion of the extension which was in excess of the "free extension" then no further deposit shall be collected from additional consumers desiring service from this extension.

(f) *Contract for Service.*—Utilities will not be required to make extensions as provided in these rules unless those served by such extension shall contract to use the service for at least one (1) year.

INDIANA: Public Service Commission: has no rules at present but are formulating rules for gas service including rules to cover gas main extensions, available in about 30 days.

KANSAS: Court of Industrial Relations: has adopted no rules or regulations.

LOUISIANA: Commissioner of Public Utilities, City of New Orleans. Extend without cost 125 ft. per house. If over 125 ft. from end of main deposit required of 75¢ per ft., without interest, deposit to be returned at rate of \$93.75 (amount for 125 ft.) for each additional house served from the extension until entire amount of deposit has been returned. This rule does not require extension in streets not at or near established grade nor prohibit extension by company. Service connection, main to meter $\frac{1}{2}$ cost by company $\frac{1}{2}$ cost by consumer.

MAINE: Public Utilities Commission: has no rules but states—Following the policy of the Commission in the matter of extensions by other classes of utilities it would undoubtedly require the consumer to pay a rate large enough to give a fair return on the cost of extension.

MARYLAND: Public Service Commission: has no state rule but states that the Baltimore plan is generally applied throughout the state as follows: 65 ft. per dwelling and 40 ft. of service pipe to curb without charge; if this involves improved pavement a charge is made to cover the cost of restoring the pavement. For excess main the charge is \$1.10 per ft. to be paid in full, or at option of applicant 10% with agreement, 90% when pipe is delivered on ground. Deposit to be refunded on basis of 65 ft. at \$1.10 per ft. for each additional dwelling. Above plan applies to cases of development of tracts of land also.

MASSACHUSETTS: Department of Public Utilities: Upon petition for extension of mains, Commission may order supply upon such terms as are legal and reasonable. Where extension is substantial and little likelihood of sufficient revenue the practice is to require sufficient guarantees to insure such revenue.

MICHIGAN: Public Utilities Commission: has adopted no general rules governing extension of gas mains. Recently made a rule in City of Lansing, that gas company shall extend main to street property line, property owner to run pipe from main to his premises.

MISSISSIPPI: Railroad Commission: has no jurisdiction governing the extension of gas mains, etc.

MISSOURI: Public Service Commission: has no rules. Policy of Commission to prescribe just and equitable terms in each particular case.

MONTANA: Public Service Commission: has no rules. Any case for extension of gas mains investigated and decided upon merits.

NEBRASKA: State Railway Commission: has no rules. Does not have jurisdiction over gas and electric companies.

NEVADA: Public Service Commission: has no rules or regulations.

NEW HAMPSHIRE: Public Service Commission: has issued no rules governing the extension of mains and services. All cases so far have been decided upon the merits in each case.

NEW JERSEY: Public Utility Commissioners: have no state rule. Each case is investigated and decided upon its merits.

NEW YORK (1st District): Public Service Commission is governed by Section 62, Transportation Corporations Law, which requires gas companies to supply new consumers who are located within 100 ft. of the companies' mains. No standard beyond the limit prescribed. In cases beyond the limit the Commission receiving a petition holds a hearing and decides upon the merits in each particular case.

NEW YORK (2nd District): Public Service Commission, Second District: has never formulated any rules governing extension of gas mains, or number of feet companies are required to extend. Under the statute reasonable extensions may be required and the question of reasonableness has always been treated by the Commission as one involving all facts and circumstances surrounding the particular case.

NEW MEXICO: State Corporation Commission: does not have jurisdiction over utility companies such as gas and has no rules.

(Continued on page 522)

AMERICAN GAS ASSOCIATION, Inc.

List No. 36—August, 1920

Rate Increases Secured.

Where information is not secured from company receiving increase, the source of information is noted in brackets. See Cumulative List No. 5 of December, 1919, for explanation of abbreviations and former rates. This list includes only increases reported as secured subsequent to June 1, 1920.

CALIFORNIA

- Modesto:* Gas Co. reports second increase effective May 20, 1920. New rate: 1st 500 c. f. \$1.25—next 2500 c. f. \$1.90 per M—next 6 MCF \$1.70—next 6 MCF \$1.50—all over 15 MCF \$1.30 per M.
- Santa Barbara:* Southern Counties Gas Co. reports increase April 27, 1920. Old rate: \$1.00 net per MCF, outside districts \$1.10 per M. New rate, City: 1st 5 MCF \$1.40—next 15 MCF \$1.35—next 30 MCF \$1.30—over 50 MCF \$1.25 per M. M. M. Chge. \$1.00 per month for 700 c. f. or less. Outside Districts: 1st 5 MCF \$1.65—next 15 MCF \$1.50—next 30 MCF \$1.45—over 50 MCF \$1.35 per M. M. M. Chge. \$1.00 per month.

CONNECTICUT

- Bridgeport:* Co. reports fourth increase effective July 1, 1920. New rate: 1st 25 MCF \$1.40—next 75 MCF \$1.35—over 100 MCF \$1.30 per M—disc. 10¢ per M. M. M. Chge. 50¢ net.
- Middletown:* Co. reports third increase effective July 1, 1920. Rates unchanged. S. Chge. of 75¢ per month added.

DISTRICT OF COLUMBIA

- Washington:* Co. reports third increase effective June 1, 1920. New rate: 1st 100 MCF \$1.25—next 200 MCF \$1.20—next 200 MCF \$1.15—next 250 MCF \$1.10—next 250 MCF \$1.05—over 1,000 MCF \$1.00 per M with penalty of 10¢, 10 days. Rate effective to Sept. 1, 1920, when rate automatically returns to original rate unless after further hearing P. S. C. orders otherwise.
- Georgetown:* Gas Light Co. same as Washington.
- Washington G. L. Co. of Montgomery Co., Md., \$1.45 per MCF less 15¢ per M, 10 days. Effective June 18, 1920.
- Georgetown G. L. Co. of Montgomery Co. same as W. G. L. Co. of Montgomery Co.
- Rosslyn (Va.) Gas Co.: \$1.60 per MCF less 10¢ per M 10 days, effective June 15, 1920.

FLORIDA

- St. Augustine:* G. & E. Lt. Co. reports increase effective Aug. 1, 1920. Old rate: \$1.40 net per M. New rate: \$1.80 net per MCF.

GEORGIA

- Augusta:* Co. reports second increase making net rates: 1st 20 MCF \$1.40—next 10 MCF \$1.25—next 10 MCF \$1.10—over 40 MCF \$1.00 per M. M. M. Chge. 25¢ per month. Co. reports third increase effective July 1, 1920. New rate: 1st 20 MCF \$1.65 net per M—next 10 MCF \$1.50—next 10 MCF \$1.35—over 40 MCF \$1.25 net per M. M. M. Chge. \$1.00 per month.

ILLINOIS

- Peoria:* Central Illinois Lt. Co. reports temporary increase by P. U. C. effective April 20, 1920. New rate: 1st 10 MCF \$1.00 net per M—next 10 MCF 95¢—next 30 MCF 90¢—next 50 MCF 85¢—next 300 MCF 75¢—over 400 MCF 70¢ net per M. Old rate: 15¢ less per M each block.
- Rockford:* Co. reports second increase effective June 1, 1920. New rate: 1st 5 MCF \$1.35—next 5 MCF \$1.30—next 20 MCF \$1.25—next 20 MCF \$1.20—next 50 MCF \$1.15—next 200 MCF \$1.10—next 200 MCF \$1.05—over 500 MCF \$1.00 per M, disc. 10¢ per M 10 days. M. M. Chge. 50¢ per month per meter.

INDIANA

- Brazil:* Co. reports second increase effective Aug. 1, 1919. Net prices: 1st 5 MCF \$1.65—next 5 MCF \$1.55—next 10 MCF \$1.35—next 10 MCF \$1.25—over 30 MCF \$1.15. Co. reports third increase effective May 1, 1920. New rate: Primary Charge for 3 and 5 lt. meters \$1.20, for 10 lt. and above \$1.75. Consumption charge 13¢ gross, 12¢ net per CCF.

Fort Wayne: Co. reports third increase effective June 1, 1920. New rate: 1st 10 MCF \$1.25 per M—next 20 MCF \$1.15—next 20 MCF \$1.05—next 150 MCF \$1.00—over 200 MCF 75¢ per M. M. M. Chge. \$1.00.

Oil Clause: The rate fixed herein for monthly consumption of gas in excess of 200,000 cu. ft. per month is predicated upon an average price of 7¢ per gallon for gas oil, f. o. b. the plant. Said rate of 75¢ shall be subject to adjustment monthly by being increased or lowered in an amount equal 1¢ per 1,000 cu. ft. for every 0.3¢ (or fractional part thereof) variation in the price per gallon of gas oil f. o. b. the plant, as is used during said month; provided, however, that the average rate for any month to any consumer using gas under this step of the schedule, shall not exceed a net rate of \$1.0325.

The minimum monthly charge shall be absorbed in the charge for gas when equal to or less than the charge for gas; the charge for gas shall be absorbed in the monthly minimum charge when less than the monthly minimum charge.

South Bend: Co. reports third increase effective June 1, 1920. New rate: 1st 10 MCF \$1.35 per M—next 20 MCF \$1.25—next 20 MCF \$1.15—next 150 MCF \$1.10—all over 200 MCF 85¢, 10¢ disc. 15 days. M. M. Chge. \$1.00 per meter. For oil clause see Fort Wayne.

IOWA

Sioux City: Co. reports second increase effective June 5, 1920. All gas \$1.60 gross, \$1.50 net per MCF 10 days. M. M. Chge. 50¢ per month per meter. Above temporary rate by order of U. S. District Court, pending a determination of the validity of a City Council Ordinance.

MAINE

Bangor: Co. reports third increase effective June 19, 1920. New rate: minimum bill 300 c. f. or less 75¢ net—1st 5 M 25¢ per CCF—next 5 M 24¢—next 10 M 23¢—next 20 M 22¢—over 40 M 20¢, disc. 1¢ per CCF each block.

MASSACHUSETTS

Arlington: Co. has been granted second increase effective July 1, 1920, from \$1.25 to \$1.70 net per MCF.

Attleboro: Co. reports third increase effective June 1, 1920. New rate \$1.60 gross, \$1.40 net per MCF.

Cambridge: Co. reports third increase effective July 1, 1920. New rate: 17¢ per CCF with disc. of 1¢ per C 10 days.

Lynn: Co. reports third increase to \$1.35 net per M effective July 1, 1920.

Malden: Co. reports third increase effective May 15, 1920. New rate: 15¢ per CCF.

Newburyport: Co. reports third increase effective June 1, 1920. New rate: 100 c. f. 80¢—next 500 c. f. 25¢ per C—balance 17¢ per CCF.

Northampton: Co. has been granted second increase effective July 1, 1920, from \$1.25 net to \$1.80 net per MCF.

Pittsfield: Co. reports fourth increase effective June 1, 1920. New rate: Pittsfield and Dalton per MCF \$1.90 gross, \$1.80 net. Lenox and Lee per MCF \$2.10 gross, \$2.00 net.

Salem: Co. reports fifth increase effective July 7, 1920. New rate: \$2.00 gross, \$1.80 net per MCF.

Wakefield: Co. reports third increase effective June 15, 1920. New rate: \$1.80 net per MCF. P. P. Meters \$2.20 per MCF net.

MICHIGAN

Ann Arbor: Co. reports third increase effective July 1, 1920. New rate: 1st 5 MCF \$1.60 per M net—over 5 MCF \$1.10 per M net. S. Chge. 30¢ per month per meter.

Battle Creek: Co. reports third increase effective May 1, 1920. New rate: 15¢ gross, 14¢ net per CCF. M. M. Chge. 25¢ per meter. Industrial rate: 85¢ gross per MCF, 75¢ net. S. Chge. 25¢ per meter.

Grand Rapids: Co. reports second increase effective May 2, 1920. New rate: \$1.40 gross, \$1.30 net per MCF, penalty 10 days. M. M. Chge. per meter, 10 lt. or under 50¢ per month; on larger sizes 5¢ per meter per month.

Franchise permitting \$1.20 net expired May 2, 1920. Application made to City Commission for \$1.50 net rate. City and Company compromised on 3 months trial rate of \$1.30 net with a reduction in heat unit requirements from 600 to 550 B. t. u.

Lansing: Fuel & Gas Co. reports increase effective June 1, 1920. Old rate: Domestic \$1.20 gross, \$1.10 net per MCF. Industrial: 1st 100 MCF \$1.20 gross, \$1.10 net—next 100 MCF 80¢ gross, 70¢ net—over 200 MCF 75¢ gross, 65¢ net per M. New rate: Domestic \$1.35 gross, \$1.25 net per MCF. Industrial: 1st 100 MCF \$1.35 gross, \$1.25 net—next 100 MCF \$1.00 gross, 90¢ net—over 200 MCF 95¢ gross, 85¢ net.

Mt. Clemens: Co. reports second increase effective July 19, 1920. New rate: \$1.85 net per MCF with 15¢ penalty 15 days. B. t. u. value reduced from 580 to 570 to 550.

Traverse City: Gas Co. reports increase effective June 1, 1920. Old rate: \$1.50 gross, \$1.25 net per MCF. New rate: \$1.65 gross, \$1.50 net per MCF. M. M. Chge. 45¢ per month per meter. According to franchise and City Charter a vote of the people was necessary to change the rate.

NEW HAMPSHIRE

Claremont: Gas Co. reports second increase effective June 1, 1920. New rate: \$2.00 per MCF less disc. 20¢ per M. Protested by citizens but after hearing P. S. C. approved rate.

Concord: Co. reports third increase June 15, 1920. New rate: 1st 10 MCF \$1.60—next 20 MCF \$1.50—next 20 MCF \$1.35—over 50 MCF \$1.15 per M. S. Chge. unchanged.

Keene: Co. reports second increase effective June 1, 1920. New rate: 1st 10 MCF \$1.95—next 20 MCF \$1.85—next 20 MCF \$1.70—over 50 MCF \$1.55 per M, disc. 10¢ per M 10 days, each block. S. Chge. unchanged.

Manchester: Co. reports second increase effective June 1, 1920. New rate: 1st 10 MCF \$1.60—next 20 MCF \$1.50—next 20 MCF \$1.40—over 50 MCF \$1.30 per M, disc. 10¢ per M, 10 days. S. Chge. 25¢ to \$1.70 per month per meter according to size.

NEW JERSEY

Elizabeth: Elizabethtown Gas Lt. Co. reports increase effective June 1, 1920. Old rate: 1st 100 MCF \$1.10—next 100 MCF \$1.05—next 100 MCF \$1.00—next 200 MCF 95¢—over 500 MCF 90¢ per M, disc. 10¢ per M 10 days. M. M. Chge. 50¢. New rate: 1st 100 MCF \$1.15 net per M—next 100 MCF 95¢—next 100 MCF 90¢—next 200 MCF 85¢—over 500 MCF 80¢ net per M. M. M. Chge. 50¢ per month. Supplies also ten adjacent cities and towns.

Perth Amboy: Gas Light Co. reports increase effective June 1, 1920. Old rate: 90¢ net per MCF. New rate: \$1.15 net per MCF. Also supplies nine adjacent towns.

NEW YORK

Elmira: Water, Lt. & Rd. Co. (Natural) reports increase effective June 15, 1920. New rate: 73¢ gross, 68¢ net per MCF. M. M. Chge. 70¢. Old rate: 57½¢ gross, 52½¢ net. M. M. Chge. 60¢.

Lockport: Co. reports second increase effective July 1, 1920. New rate: 1st 3 MCF \$1.60 per M—next 7 MCF \$1.45—over 10 MCF \$1.20, disc. 10¢ per M each block.

New York City: Consolidated Gas Co., by order of U. S. Courts granted increase from 80¢ to \$1.00 per MCF effective July 1, 1920. Excess collected to be placed in escrow pending final decision of the court in suits brought by the Consolidated Gas Co. of N. Y. Decision also applies to Standard Gas Light Co., Central Union Gas Co., Northern Union Gas Co., New York Mutual Gas Light Co., New Amsterdam Gas Co., East River Gas Co., and Kings County Lighting Co.

Nyack: Rockland Light & Power Co. reports increase effective June 24, 1920. New rate: 1st 20 MCF \$2.00 net per M—next 20 MCF \$1.75—next 30 MCF \$1.50—all over 70 MCF \$1.40 net per M. Old rates same blocks \$1.75, \$1.65, \$1.55, \$1.45.

Schenectady: Adirondack Power & Light Co. reports increase effective July 11, 1920. Old rate: \$1.10 gross, \$1.00 net per MCF. M. M. Chge. 50¢. New rate: 1st 50 MCF \$1.60—next 50 MCF \$1.40—over 100 MCF \$1.20 per M, 10¢ per M disc. 15 days. M. M. Chge. 50¢. Fuel for house heating \$1.20 net per MCF. M. M. Chge. \$1.00 per month per meter. Supplies also Scotia, Glenville, Niskayuna and Rotterdam.

Watertown: Co. reports second increase effective June 15, 1920. New rate: \$2.30 net per MCF. M. M. Chge. 50¢ per month. Protest pending.

Waverly: Gas Light Co. reports increase effective June 1, 1920. Old rate: \$1.50 less 15¢ per MCF prompt pay. New rate: \$1.65 per MCF less disc. or 15¢ 20 days. S. Chge. 50¢ per month per meter.

PENNSYLVANIA

Allentown: Co. reports third increase effective June 1, 1920. Allentown, Bethlehem and Catasauqua, gas for all purposes \$1.10 gross, \$1.00 net 10 days per MCF. Hellertown \$1.30 gross, \$1.20 net. Monthly Service Chge. 3 lt. to 5 lt. Meters 75¢ per month—5-A to 30 lt. \$1.00—45 to 80 lt. \$1.25—100 lt. and over \$1.50 per Meter per month, all S. Chges. net.

Athens: Co. reports second increase effective June 1, 1920. New rate: \$1.65 per MCF, 15¢ disc. 20 days. S. Chge. raised from 25¢ to 50¢ per month per meter.

Chester: Co. reports third increase effective June 1, 1920. New rates remains as in second increase up to 9th block (200 MCF); 10th block, all over 600 MCF 80¢ per M net.

Coatesville: Co. reports second increase effective June 1, 1920. Rates unchanged increase in R. T. S. from 25¢ per month per meter to same charges as Hazleton.

Easton: Co. reports second increase effective June 29, 1920. New rate \$1.50 per MCF for all gas used. S. Chge. 35¢ for 3 or 5 lt. meter, 1¢ per each light added for each meter above 5 lt. Temporary rate for Gas Service less than one year contract \$2.50 per MCF. M. M. Chge. \$2.50, for contract term \$5.00.

Hazleton: Co. reports third increase effective June 12, 1920. New rate: 1st 10 M 16¢ per CCF—next 10 M 15¢—next 10 M 14¢—next 10 M 13¢—next 60 M 12¢—next 150 M 11¢—all over 250 M 10¢ per CCF. R. T. S. Chge.: 3 lt. 70¢, 5 lt. 75¢, 10 lt. 85¢, 20 lt. 90¢, 30 lt. \$1.00, 45 lt. \$1.25, 60 lt. \$1.50, 80 lt. \$2.10, 100 lt. \$2.50, 150 lt. \$3.33 per month per meter.

Jenkintown: Co. reports second increase effective June 1, 1920. New rate: 1st 5 M 15¢ per CCF—next 5 M 14¢—next 15 M 12.5¢—next 25 M 11¢—over 40 M 10¢ per C, disc. 1¢ per CCF each block. R. T. S. Chge. see Hazleton. P. P. Meters 16¢ net per CCF.

Phanixville: Phila. Suburban G. & E. Co. reports second increase effective June 1, 1920. New rate: 1st 5 M 17.5¢ per CCF—next 10 M 17¢—next 15 M 16¢—next 15 M 15¢—next 15 M 14¢—over 60 M 13¢ per C, disc. 1¢ per CCF. R. T. S. Chge. see Hazleton.

Pottstown: Co. reports second increase effective June 1, 1920. New rate 1st 5M 13.5¢ net per CCF—next 10 M 13¢—next 15 M 12¢—next 15 M 11¢—next 15 M 10¢—over 60 M 9¢ per C. R. T. S. Chge., see Hazleton. P. P. Meters 180 c. f. for 25¢.

Reading: Co. reports second increase effective June 1, 1920. S. Chge. increased to 5 lt. meters and under 75¢ per month per meter, 10, 20 and 30 lt. \$1.00, 45 and 60 lt. \$1.25, 100 lt. and over \$1.50 per month per meter. All prices net.

Shenandoah: Co. reports second increase effective May 1, 1920. New rate \$1.70 per MCF with 10¢ penalty 15 days. M. M. Chge. \$1.00 per month per meter. S. Chge. 50¢ per month per meter. Industrial \$1.50 per MCF, same penalty. Same M. M. and S. Chge.

West Chester: Co. reports second increase effective June 1, 1920. New rate: all gas \$1.30 per MCF, disc. 10¢ per M 10 days. P. P. Meters \$1.30 per M net. S. Chge. 3 or 5 lt. meters 75¢ per month per meter, 5-A to 30 lt. \$1.00, 45 to 80 lt. \$1.25, 100 lt. and over \$1.50 per month per meter. S. Chges. net.

(Continued from page 518)

NORTH CAROLINA: Corporation Commission: has no rules governing extension of gas mains.

OHIO: Public Utilities Commission: under Laws of Ohio, General Code, the right to compel extensions or additions is reserved to the Councils of municipalities. The Commission has only appellate jurisdiction over such action of municipality. To this time no case has been appealed.

OKLAHOMA: Corporation Commission: has no rules. Matters of extension are frequently before Commission but owing to abnormal conditions it has not been considered expedient to establish rules requiring companies to extend their lines a definite number of feet to supply new consumers. The present policy is to require extension only warranted by the estimated revenue allowing the company 8% interest return on investment and 5% to 10% depreciation.

OREGON: Public Service Commission: has no rules.

PENNSYLVANIA: Public Service Commission: has made no rules as to extension of gas mains. Decision is controlled by the facts in each particular case.

RHODE ISLAND: Public Utilities Commission: has no rule regulating extension of gas mains. Most of the companies have on file with the Commission a tariff which provides for extension—the common prac-

tice being to charge a sufficient amount for the new work to reimburse the company, until such time when additional services will give the company a proper return upon the investment.

VERMONT: Public Service Commission: has no rules governing extension of mains.

VIRGINIA: State Corporate Commission: has no rules governing extension of mains.

WASHINGTON: Public Service Commission: has no rules. Gas utilities in this State generally cover this matter by individual rules.

WEST VIRGINIA: Public Service Commission: rules require installation of service pipe from main to property line of consumer. The question of extension of mains must be decided by the peculiar conditions in each particular case and no rule has been adopted.

WISCONSIN: Railroad Commission: all companies are required to file with Commission all rules or regulations affecting service to the public. These rules must be approved by the Commission. It is left with each company to establish rules governing extension of mains in its particular locality.

WYOMING: Public Service Commission: has no rules or regulations governing the extension of gas mains.

Classified Directory--Manufacturers of Gas Equipment

Company Members Only, American Gas Association, Inc.

ACETIC ACID

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

ARC LAMPS (Gas)

General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

AUTOMATIC CONDENSATION RECEIVERS

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

BENCHES

J. H. Gautier & Co., Jersey City, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Gas Machinery Co., Inc., Cleveland, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BENCH IRON WORK

Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Riter-Conley Company, Pittsburgh, Pa.
Russell Engineering Co., St. Louis, Mo.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

BOILERS (Gas)

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Hugo Manufacturing Co., West Duluth, Minn.
Wm. Kane Mfg. Co., Inc., 1915 Adams St., Philadelphia, Pa.
Kidd & Co., 169 Chambers St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
F. W. Ofeldt & Sons, Nyack, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BOILERS (Gas for House Heating)

Dodd Heating Systems Limited, Toronto, Ont.
Kidd & Co., 169 Chambers St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

BOILERS (Waste Heat)

The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

BLOWERS, BOOSTERS, EXHAUSTERS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Isbell-Porter Co., Newark, N. J.
Maxon Furnace and Engineering Co., Muncie, Ind.
The Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

The Western Gas Construction Co., Fort Wayne, Ind.
Wilbraham-Green Blower Co., Pottstown, Pa.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

BRAZING TABLES

Rathbone, Sard & Co., Albany, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

BROILERS (Hotel)

Geo. M. Clark & Co., Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The De Mattei Broiler System Co., Inc., New York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
The Michigan Stove Co., Detroit, Mich.

BURNERS (Industrial)

American Gas Furnace Co., 24 John St., New York, N. Y.
Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
Grinnell Co., Inc., Providence, R. I.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
International Hale Gas Mixer Co., Providence, R. I.
Hugo Manufacturing Co., West Duluth, Minn.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
The Maxon Furnace & Engineering Co., Muncie, Ind.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
Needham Gas Appliance Co., 1 S. Lafayette St., New York City.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

BURNERS (Lighting)

American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS

By-Product Coke Corp., Chicago, Ill.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Semet-Solvay Co., Syracuse, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

BY-PRODUCT RECOVERY APPARATUS

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio

BY-PRODUCT RECOVERY APPARATUS

The Koppers Co., Pittsburgh, Pa.
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

CALORIMETERS

American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
 The Brown Instrument Co., Phila., Pa.
 D. McDonald & Co., Albany, N. Y.
 Maryland Meter Works, Baltimore, Md.
 Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
 Superior Meter Co., Brooklyn, N. Y.

CASING, TUBING (Steel)

National Tube Co., Frick Bldg., Pittsburgh, Pa.

CASTINGS (Grey Iron)

Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.

CHARGING COAL

Isbell-Porter Co., Newark, N. J.
 Phillips, Lang & Co., Chicago, Ill.
 The Bartlett Hayward Co., Baltimore, Md.
 The Gas Machinery Co., Cleveland, Ohio
 The Western Gas Construction Co., Fort Wayne, Ind.

CHIMNEYS (Radial Brick)

Alphons Custodis Chimney Construction Co., Marquette Bldg., Chicago, Ill.

COAL AND COKE (Conveyors, Crushers, Screeners)

R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
 Ritter-Conley Company, Pittsburgh, Pa.
 Stephens-Adams Mfg. Co., Aurora, Ill.
 Isbell-Porter Co., Newark, N. J.
 Phillips, Lang & Co., Chicago, Ill.
 The Bartlett Hayward Co., Baltimore, Md.
 The Gas Machinery Co., Cleveland, Ohio
 The Godfrey Conveyor Co., Elkhart, Ind.
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS

The Barrett Company, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)

A-B Stove Co., Battle Creek, Mich.
 Claus Automatic Gas Cock Co., Milwaukee, Wis.
 Hays Mfg. Co., Inc., Erie, Pa.
 Johnson Gas Appliance Co., Cedar Rapids, Iowa
 Kitson Co., 2837 Oakford St., Philadelphia, Pa.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
 Pratt & Cady Company, Inc., Hartford, Conn.
 Standard Brass Works, Detroit, Mich.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Roberts Brass Mfg. Co., Detroit, Mich.

COMPOUND FOR CLEANING GAS METERS AND GAS STOVES

Standard Chemical & Supply Co., Cambridge A, Mass.

COMPRESSORS

Plant Engineering & Equipment Co., 192 Broadway, New York, N. Y. (Air Compressors).
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The C. M. Kemp Mfg. Co., Baltimore, Md.
 The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

CONDENSERS

Camden Iron Works, Camden, N. J.
 Cruse-Kemper Co., Ambler, Pa.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Gas Engineering Co., Ingram Ave., Trenton, N. J.
 Isbell-Porter Co., Newark, N. J.
 Ritter-Conley Company, Pittsburgh, Pa.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 The Gas Machinery Co., Cleveland, Ohio

The Stacey Manufacturing Co., Cincinnati, Ohio
 The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

COOKING AUXILIARIES

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Duparquet, Huot & Moncuse Co., 108 W. 32nd St., New York, N. Y.
 Johnson Gas Appliance Co., Cedar Rapids, Iowa
 The G. S. Blodgett Co., Burlington, Vt.
 The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Scott Gas Appliance Co., 1311 E. St., N. W., Washington, D. C.

COUPLINGS

S. R. Dresser Mfg. Co., Bradford, Pa.

CYLINDERS (Pressure)

National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECALCOMANIA PRODUCTS

The Meyercord Co., Inc., Chamber of Commerce Bldg., Chicago, Ill.

DISINFECTANTS

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

DYES, DISINFECTANTS, DRY COLORS

The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

ELECTRIC CONTROLLING DEVICES

The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

ELEVATORS

Craig Ridgway & Son Co., Coatesville, Pa.
 Phillips, Lang & Co., Chicago, Ill.

ENAMELS AND JAPANS (Heat Resisting)

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

EXCHANGERS (Heat)

The Bartlett Hayward Co., Baltimore, Md.
 Ritter-Conley Company, Pittsburgh, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

EXPERT APPRAISAL

Steere Engineering Co., Detroit, Mich.
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)

Gas Engineering Co., Ingram Ave., Trenton, N. J.
 Isbell-Porter Co., Newark, N. J.
 The Bartlett Hayward Co., Baltimore, Md.
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

FITTINGS

A-B Stove Co., Battle Creek, Mich.
 Banner Iron Works, 4560 Shaw Ave., St. Louis, Mo.
 Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
 Claus Automatic Gas Cock Co., Milwaukee, Wis.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 S. R. Dresser Mfg. Co., Bradford, Pa.
 Eriez Stove & Mfg. Co., Erie, Pa.
 General Fire Extinguisher Co., Providence, R. I.
 Kitson Co., 2837 Oakford St., Philadelphia, Pa.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
 Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
 Standard Brass Works, Detroit, Mich.
 The Gas Machinery Co., Cleveland, Ohio

The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Roberts Brass Mfg. Co., Detroit, Mich.
 The Western Gas Construction Co., Fort Wayne, Ind.
 Welsbach Co., Gloucester, N. J.

FITTINGS (Malleable Iron)

Stanley G. Flagg & Co., 1421 Chestnut St., Philadelphia, Pa.

FLEXIBLE TUBING

Atlantic Tubing Co., Providence, R. I.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Titeflex Metal Hose Corp., Badger Ave., Newark, N. J.

FLASHLIGHTS AND BATTERIES

Will W. Barnes, 31 Chelsea Place, East Orange, N. J.

FUEL BRIQUETTING

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
 General Briquetting Co., 25 Broad St., New York, N. Y.

FURNACES

American Gas Furnace Co., 24 John St., New York, N. Y.
 Century Stove & Mfg. Co., Johnstown, Pa.
 Erie Stove & Mfg. Co., Erie, Pa.
 Geist Mfg. Co., Atlantic City, N. J.
 Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
 Johnson Gas Appliance Co., Cedar Rapids, Iowa
 Maxon Furnace and Engineering Co., Muncie, Ind.
 National Machine Works, Sheffield & North Aves., Chicago, Ill.
 Needham Gas Appliance Co., Inc., 1 S. Lafayette St., New York.
 Russell Engineering Co., St. Louis, Mo.
 Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
 The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
 Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.

GAS ENGINES

The Bartlett Hayward Co., Baltimore, Md.

GAS ENGINE COCKS AND VALVES

Standard Brass Works, Detroit, Mich.

GAS IRONS

A-B Stove Co., Battle Creek, Mich.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Johnson Gas Appliance Co., Cedar Rapids, Iowa
 Milwaukee Gas Specialty Co., Milwaukee, Wis.
 Perfect Combustion Co., Chicago, Ill.
 Strause Gas Iron Co., Philadelphia, Pa.

GAS LOGS

Backus Heater & Foundry Co., Inc., Boston, Mass.
 The Mead Gas Heater Co., Delawanna, N. J.
 Strait & Richards, Inc., Newark, N. J.

GAS MAIN BAGS AND GAS MAIN STOPPERS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York City.

GAS MIXERS

American Gas Furnace Co., 24 John St., New York, N. Y.
 Century Stove & Mfg. Co., Johnstown, Pa.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Erie Stove & Mfg. Co., Erie, Pa.
 Geist Mfg. Co., Atlantic City, N. J.
 Grinnell Co., Inc., Providence, R. I.
 Hays Mfg. Co., Inc., Erie, Pa.
 Improved Appliance Co., Inc., 419 Kent Ave., Brooklyn, N. Y.

International Hale Gas Mixer Co., Providence, R. I.

Johnson Gas Appliance Co., Cedar Rapids, Iowa
 Maxon Furnace & Engineering Co., Muncie, Ind.
 Strait & Richards, Inc., Newark, N. J.
 Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.

The C. M. Kemp Mfg. Co., Baltimore, Md.
 Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
 The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)

Gas Engineering Co., Ingram Ave., Trenton, N. J.
 The Bartlett Hayward Co., Baltimore, Md.
 The Gas Machinery Co., Cleveland, Ohio
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Carbureted Water)

Gas Engineering Co., Ingram Ave., Trenton, N. J.
 Gas Machinery Co., Cleveland, Ohio
 The Bartlett Hayward Co., Baltimore, Md.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Stacy Manufacturing Co., Cincinnati, Ohio
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)

Camden Iron Works, Camden, N. J.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Gas Engineering Co., Ingram Ave., Trenton, N. J.
 Isbell-Porter Co., Newark, N. J.
 National Machine Works, Sheffield & North Aves., Chicago, Ill.
 Ritter-Conley Company, Pittsburgh, Pa.
 Russell Engineering Co., St. Louis, Mo.
 Semet-Solvay Co., Syracuse, N. Y.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 The Gas Machinery Co., Cleveland, Ohio
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
 The Stacy Manufacturing Co., Cincinnati, Ohio
 The Stacy Bros. Gas Construction Co., Cincinnati, Ohio
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

GAS RANGE WATER HEATERS

Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.

GOVERNORS, PRESSURE VACUUM & PUMP

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York.
 Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

HEATERS (Room)

Backus Heater & Foundry Co., Inc., Boston, Mass.
 Century Stove & Mfg. Co., Johnstown, Pa.
 Geo. M. Clark & Co. Div., Chicago, Ill.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Detroit Stove Works, Detroit, Mich.
 Eclipse Gas Stove Co., Rockford, Ill.
 Erie Stove & Mfg. Co., Erie, Pa.
 Estate Stove Co., Hamilton, Ohio
 Geist Mfg. Co., Atlantic City, N. J.
 General Fire Extinguisher Co., Providence, R. I.
 General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
 The J. H. Grayson Mfg. Co., Athens, Ohio
 Hugo Manufacturing Co., West Duluth, Minn.
 Illinois Specialty Mfg. Co., Bloomington, Ill.
 Kidde & Co., 169 Chambers St., New York, N. Y.
 Lawson Mfg. Co., Pittsburgh, Pa.
 Masdon Mfg. Co., Cambridge, Mass.

New Process Stove Co. Div., Cleveland, Ohio
 Reliable Stove Co. Div., Cleveland, Ohio
 Reznor Mfg. Co., Mercer, Pa.
 Roberts & Mander Stove Co., Philadelphia, Pa.
 J. B. Slattery & Bro. Inc., 108-110 Lawrence St.,
 Brooklyn, N. Y.
 Strait & Richards, Inc., Newark, N. J.
 The Baltimore Gas Appliance & Mfg. Co., Balti-
 more, Md.
 The Champion Stove Co., Cleveland, Ohio
 The Mead Gas Heater Co., Delawanna, N. J.
 The Ohio State Stove & Mfg. Co., Columbus,
 Ohio.
 The Sanitary Heating Co., 233 37th St., Brooklyn,
 N. Y.
 The Western Gas Construction Co., Fort Wayne,
 Ind.
 The A. H. Wolff Gas Radiator Co., 4 Great Jones
 St., New York, N. Y.
 Welsbach Co., Gloucester, N. J.

HEATERS (Garage)

Kidde & Co., 169 Chambers St., New York, N. Y.
 Masdon Mfg. Co., Cambridge, Mass.

HEATERS (Pressing and Soldering Irons)

Geo. M. Clark & Co. Div., Chicago, Ill.
 Wm. M. Crane Co., 16 W. 32d St., New York,
 N. Y.
 Eclipse Gas Stove Co., Rockford, Ill.
 Estate Stove Co., Hamilton, Ohio
 General Gas Appliance Co., 103 Park Ave., New
 York, N. Y.
 Charles A. Hones, Inc., 91 Noble St., Brooklyn,
 N. Y.
 Johnson Gas Appliance Co., Cedar Rapids, Iowa
 Strait & Richards, Inc., Newark, N. J.
 The Bryant Heater & Mfg. Co., Cleveland, Ohio
 The Improved Appliance Co., 419 Kent Ave.,
 Brooklyn, N. Y.

HIGH PRESSURE SYSTEMS

Connelly Iron Sponge & Governor Co., 227 Fulton
 St., New York, N. Y.
 Grinnell Co., Inc., Providence, R. I.
 H. Mueller Mfg. Co., New York, N. Y., and
 Decatur, Ill.
 Needham Gas Appliance Co., Inc., 1 S. Lafayette
 St., New York City.
 Selas Co., 521 W. 23d St., New York, N. Y.
 The Gas Machinery Co., Cleveland, Ohio
 The C. M. Kemp Mfg. Co., Baltimore, Md.
 The Surface Combustion Co., 366 Gerard Ave.,
 Bronx, N. Y.

HOLDERS (Structural Steel Works))

Banner Iron Works, 4560 Shaw Ave., St. Louis,
 Mo.
 Camden Iron Works, Camden, N. J.
 Cruse-Kemper Co., Ambler, Pa.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Gas Engineering Co., Ingram Ave., Trenton, N. J.
 Ritter-Conley Company, Pittsburgh, Pa.
 The Bartlett Hayward Co., Baltimore, Md.
 The Stacey Bros. Gas Construction Co., Cincin-
 nati, Ohio
 The Stacey Manufacturing Co., Cincinnati, Ohio
 The Western Gas Construction Co., Fort Wayne,
 Ind.

HOT PLATES

A-B Stove Co., Battle Creek, Mich.
 Century Stove & Mfg. Co., Johnstown, Pa.
 Geo. M. Clark & Co. Div., Chicago, Ill.
 Wm. M. Crane Co., 16 W. 32d St., New York,
 N. Y.
 Detroit Stove Works, Detroit, Mich.
 Eclipse Gas Stove Co., Rockford, Ill.
 Eriez Stove & Mfg. Co., Erie, Pa.
 General Gas Appliance Co., 103 Park Ave., New
 York, N. Y.
 Rathbone, Sarr & Co., Albany, N. Y.
 J. B. Slattery & Bro., Inc., 108-110 Lawrence St.,
 Brooklyn, N. Y.
 The Baltimore Gas Appliance & Mfg. Co., Balti-
 more, Md.
 The Champion Stove Co., Cleveland, Ohio
 The Eclipse Stove Co., Mansfield, Ohio
 The Improved Appliance Co., 419 Kent Ave.,
 Brooklyn, N. Y.

The Michigan Stove Co., Detroit, Mich.
 The A. H. Wolff Gas Radiator Co., 4 Great Jones
 St., New York, N. Y.
 The Ohio State Stove & Mfg. Co., Columbus,
 Ohio
 Union Stove Works, 20 Beekman St., New York,
 N. Y.
 Weir Stove Co., Taunton, Mass.

IRONING MACHINES

American Ironing Machine Co., 168 N. Michigan
 Ave., Chicago, Ill.
 Barnett Foundry & Machine Co., Lyons Ave.,
 Irvington, N. J.

INCINERATORS

Estate Stove Co., Hamilton, Ohio
 Odorless Incinerator Co., Philadelphia, Pa.
 Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)

American Meter Co., 105 W. 40th St., New York,
 N. Y.
 Bacharach Industrial Instrument Co., Pittsburgh,
 Pa.
 Bailey Meter Co., Cleveland, Ohio
 The Brown Instrument Co., Phila., Pa.
 Connelly Iron Sponge & Governor Co., 227 Fulton
 St., New York, N. Y.
 Equitable Meter Co., Pittsburgh, Pa.
 D. McDonald & Co., Albany, N. Y.
 Maryland Meter Works, Baltimore, Md.
 Precision Instrument Co., 21 Halsey St., Newark,
 N. J.
 Republic Flow Meters Co., 565 Washington
 Blvd., Chicago, Ill.
 Steere Engineering Co., Detroit, Mich.
 Superior Meter Co., Bush Terminal, Brooklyn,
 N. Y.
 The Schaeffer & Budenberg Mfg. Co., Brooklyn,
 N. Y.
 The U. G. I. Contracting Co., Broad & Arch Sts.,
 Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne,
 Ind.

INSULATING MATERIALS

Celite Products Co., 11 Broadway, New York,
 N. Y.
 Davis & Farnum Mfg. Co., Waltham, Mass.

KILNS (For Firing Glass, China and Pottery)

B. F. Drakenfeld & Co., Inc., 50 Murray St.,
 New York, N. Y.
 General Gas Appliance Co., 103 Park Ave., New
 York, N. Y.
 Russell Engineering Co., St. Louis, Mo.
 The Improved Appliance Co., 419 Kent Ave.,
 Brooklyn, N. Y.
 The Parker-Russell Mining & Mfg. Co., St.
 Louis, Mo.
 The Surface Combustion Co., 366 Gerard Ave.,
 Bronx, N. Y.

LIGHTERS (Ranges)

Claus Automatic Gas Cock Co., Milwaukee, Wis.
 Will W. Barnes, East Orange, N. J.
 Milwaukee Gas Specialty Co., Milwaukee, Wis.
 Safety Gas Lighter Co., Haverhill, Mass.
 Strause Gas Iron Co., Philadelphia, Pa.
 The Michigan Stove Co., Detroit, Mich.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)

Will W. Barnes, 31 Chelsea Place, East Orange,
 N. J.
 Shapiro & Aronson, Inc., 20 Warren St., New
 York, N. Y.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)

Will W. Barnes, 31 Chelsea Place, East Orange,
 N. J.
 Kramer Bros. Lamp Co., 535 Broadway, New
 York, N. Y.
 Royal Art Glass Co., 243 Canal St., New York,
 N. Y.
 Shapiro & Aronson, Inc., 20 Warren St., New
 York, N. Y.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)

Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)

Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)

General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Welsbach Co., Gloucester, N. J.

METAL RECEPTACLES

American Gas Furnace Co., 24 John St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.
United Lead Co., 111 Broadway, New York, N. Y.

METERS

American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co., Pittsburgh, Pa.
Bailey Meter Co., Cleveland, Ohio
Cleveland Gas Meter Co., Cleveland, Ohio
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Metric Metal Works, Erie, Pa.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Precision Instrument Co., 21 Halsey St., Newark, N. J.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.
Rotary Meter Co., 52 Vanderbilt Ave., New York, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Cutler-Hammer Mfg. Co., Milwaukee, Wis.
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METERS (Air and Steam)

Pittsburgh Meter Co., East Pittsburgh, Pa.
Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.

American Meter Co., 105 W. 40th St., New York, N. Y.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Lattimer Stevens Co., Columbus, Ohio
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Pittsburgh Meter Co., East Pittsburgh, Pa.

METERS (Steam, Condensation, Oil, Hot and Cold Water)

Pittsburgh Meter Co., Gasoline, East Pittsburgh, Pa.
Plant Engineering & Equipment Co., Inc., 192

Broadway, New York, N. Y.

Republic Flow Meters Co., 56 S. Washington Blvd., Chicago, Ill.

METER PROVERS

American Meter Co., 105 W. 40th St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Pittsburgh Meter Co., East Pittsburgh, Pa.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.

METER SHELF

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.

OFFICE LABOR SAVING DEVICES

Addressograph Co., Chicago, Ill.
Burroughs Adding Machine Co., Detroit Mich.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kalamazoo, Mich.
Library Bureau, Boston, Mass.
Monroe Calculating Machine Co., Woolworth Bldg., New York, N. Y.
Remington Typewriter Co., 374 Broadway, New York
The Rand Co., North Tonawanda, N. Y.
Underwood Typewriter Co., Vesey St., New York, N. Y.

OIL (Diaphragm)

John J. Griffin & Co., 1521 Race St., Philadelphia, Pa.
Superior Meter Co., Brooklyn, N. Y.

OVENS (Baking and Cooking)

Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Famous Oven Manufacturing Co., 110 W. 42nd St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The G. S. Blodgett Co., Burlington, Vt.
The Crandall-Pettee Co., Hudson St., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Ohio State Stove & Mfg. Co., Columbus, Ohio
The Union Steel Products Co., Ltd., Albion, Mich.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

OVENS (Annealing, Japanning, Drying, Core, etc.)

Famous Oven Manufacturing Co., 110 W. 42nd St., New York, N. Y.
Gehrnlich Indirect Heat Oven Co., Inc., 62 Franklin Ave., Brooklyn, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Grinnell Co., Inc., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
National Machine Works, Sheffield & North Aves., Chicago, Ill.
E. E. Steiner & Co., Inc., 20 Orange St., Newark, N. J.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.

The Surface Combustion Co., 366 Gerard Ave., New York, N. Y.
 The Union Steel Products Co., Ltd., Albion, Mich.
 Young Bros. Co., Detroit, Mich.

OVENS (Warming)

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Eclipse Gas Stove Co., Rockford, Ill.
 General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 Meek Oven Mfg. Co., 18 W. 34th St., New York, N. Y.
 The G. S. Blodgett Co., Burlington, Vt.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Union Steel Products Co., Ltd., Albion, Mich.

PAINTS (Metal Protective, Gas Holder, Acid Resisting, Coal Tar Pitch, Gas Resisting, Marine)

The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

PHOTOMETERS

American Meter Co., 105 W. 40th St., New York, N. Y.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 D. McDonald & Co., Albany, N. Y.
 Maryland Meter Works, Baltimore, Md.
 Nathaniel Tufts Meter Works, Boston, Mass.

PIPE

Camden Iron Works, Camden, N. J.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Grinnell Co., Inc., Providence, R. I.
 National Tube Co., Erick Bldg., Pittsburgh, Pa.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS

Banner Iron Works, 4360 Shaw Ave., St. Louis, Mo.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 National Machine Works, Sheffield & North Aves., Chicago, Ill.
 Isbell-Porter Co., Newark, N. J.
 Gas Engineering Co., Ingram Ave., Newark, N. J.
 The Bartlett Hayward Co., Baltimore, Md.
 The Stacey Manufacturing Co., Cincinnati, Ohio
 The Western Gas Construction Co., Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES

Davis & Farnum Mfg. Co., Waltham, Mass.
 S. R. Dresser Mfg. Co., Bradford, Pa.
 National Machine Works, Sheffield & North Aves., Chicago, Ill.

PIPE PACKING

Celite Products Co., 11 Broadway, New York, N. Y.
 Grinnell Co., Inc., Providence, R. I.
 Passaic Metal Packing Co., Passaic, N. J.
 United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)

Grinnell Co., Inc., Providence, R. I.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
 United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
 General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

PORCELAIN ENAMEL PARTS (Stoves, Lamps, Linings, Stamping and Spinnings)

Baltimore Enamel & Novelty Co., Baltimore, Md.
 Eclipse Gas Stove Co., Rockford, Ill.
 The Enamel Products Co., Cleveland, Ohio
 The Porcelain Enamel & Mfg. Co., Baltimore, Md.
 The Union Steel Products Co., Ltd., Albion, Mich.

PORCELAIN ENAMEL PLANTS (Installers)

The Porcelain Enamel & Mfg. Co., Baltimore, Md.

PRESSURE GAUGES

American Meter Co., 105 W. 40th St., New York, N. Y.
 Bacharach Industrial Instrument Co., Pittsburgh, Pa.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Equitable Meter Co., Pittsburgh, Pa.
 Grinnell Co., Inc., Providence, R. I.
 D. McDonald & Co., Albany, N. Y.
 Maryland Meter Works, Baltimore, Md.
 National Machine Works, Sheffield & North Aves., Chicago, Ill.
 Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
 The Brown Instrument Co., Phila., Pa.
 The Bryant Heater & Mfg. Co., Cleveland, Ohio
 The Gas Machinery Co., Cleveland, Ohio
 The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
 The Western Gas Construction Co., Fort Wayne, Ind.
 Nathaniel Tufts Meter Works, Boston, Mass.

PUMPS

American Meter Co., 105 W. 40th St., New York, N. Y.
 Gas Machinery Co., Cleveland, Ohio
 Nathaniel Tufts Meter Works, Boston, Mass.
 Plant Engineering & Equipment Co., Inc., 193 Broadway, New York, N. Y. (Centrifugal, Reciprocating & Sump).
 Superior Meter Co., Brooklyn, N. Y.
 The Western Gas Construction Co., Fort Wayne, Ind.
 L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS

Camden Iron Works, Camden, N. J.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Cruse-Kemper Co., Ambler, Pa.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Gas Engineering Co., Ingram Ave., Newark, N. J.
 Gas Machinery Co., Cleveland, Ohio
 Isbell-Porter Co., Newark, N. J.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
 The Stacey Manufacturing Co., Cincinnati, Ohio
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

PURIFYING MATERIALS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Eph Lyon, Trust Company Bldg., Franklin, Pa.
 Gas Purifying Materials Co., Long Island City, N. Y.
 J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.
 Iron Hydroxide Co., Paschall Station, Philadelphia, Pa.

PYROMETERS

The Brown Instrument Co., Phila., Pa.

RADIATORS

James B. Clow & Sons, Chicago, Ill.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Erie Stove & Mfg. Co., Erie, Pa.
 Grinnell Co., Inc., Providence, R. I.
 Hugo Manufacturing Co., West Duluth, Minn.
 Kidde & Co., 169 Chambers St., New York, N. Y.
 J. B. Slatery & Bro., Inc., 108-110 Lawrence St., Brooklyn, N. Y.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Mead Gas Heater Co., Delawanna, N. J.
 The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

RANGES (Domestic)

A-B Stove Co., Battle Creek, Mich.
 Century Stove & Mfg. Co., Johnstown, Pa.
 Geo. M. Clark & Co. Div., Chicago, Ill.
 Chambers Manufacturing Co., Shelbyville, Ind.—
 (Fireless type)
 Bartlett & Co., Inc., Philadelphia, Pa.
 Comstock-Castle Stove Co., Quincy, Ill.
 Abram Cox Stove Co., Philadelphia, Pa.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Detroit Stove Works, Detroit, Mich.
 Dangier Stove Co. Div., Cleveland, Ohio
 Eclipse Gas Stove Co. Div., Rockford, Ill.
 Erie Stove & Mfg. Co., Erie, Pa.
 Estate Stove Co., Hamilton, Ohio
 National Stove Co. Div., Lorain, Ohio
 New Process Stove Co. Div., Cleveland, Ohio
 Quick Meal Stove Co. Div., St. Louis, Mo.
 Karbone, Sard & Co., Albany, N. Y.
 Reliable Stove Co. Div., Cleveland, Ohio
 Roberts & Mander Stove Co., Philadelphia, Pa.
 Scott Gas Appliance Mfg. Co., Commercial House, Pottstown, Pa.
 The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
 The Champion Stove Co., Cleveland, Ohio
 The Eclipse Stove Co., Mansfield, Ohio
 The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 The Michigan Stove Co., Detroit, Mich.
 The Ohio State Stove & Mfg. Co., Columbus, Ohio
 The Peninsular Stove Co., Detroit, Mich.
 The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
 Union Stove Works, 70 Beekman St., New York, N. Y.
 Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
 Walker & Pratt Mfg. Co., Boston, Mass.
 Weir Stove Co., Taunton, Mass.

RANGES (Hotel)

Geo. M. Clark & Co. Div., Chicago, Ill.
 Comstock-Castle Stove Co., Quincy, Ill.
 Abram Cox Stove Co., Philadelphia, Pa.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Detroit Stove Works, Detroit, Mich.
 Duparquet, Huot & Monseuse Co., 108 W. 22nd St., New York, N. Y.
 Eclipse Gas Stove Co. Div., Rockford, Ill.
 Estate Stove Co., Hamilton, Ohio
 The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 Roberts & Mander Stove Co., Philadelphia, Pa.
 The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
 The Michigan Stove Co., Detroit, Mich.

REFRACTORY MATERIALS

J. H. Gautier & Co., Jersey City, N. J.
 Harbison-Walker Refractories Co., Pittsburgh, Pa.
 Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
 Mount Union Refractories Co., Mount Union, Pa.
 Russell Engineering Co., St. Louis, Mo.
 Tate-Jones & Co., Inc., 30 Church St., New York, N. Y.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md.
 The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

REGULATORS (Governors)

American Meter Co., 105 W. 40th St., New York, N. Y.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Equitable Meter Co., Pittsburgh, Pa.
 Gas Machinery Co., Cleveland, Ohio
 Isbell-Porter Co., Newark, N. J.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
 National Machine Works, Sheffield & North Aves., Chicago, Ill.
 Reynolds Gas Regulator Co., Anderson, Ind.
 Steere Engineering Co., Detroit, Mich.
 The Brown Instrument Co., Philadelphia, Pa.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Cleveland Rotary Meter Co., Cleveland, Ohio
 The Sprague Meter Co., Bridgeport, Conn.
 The Western Gas Construction Co., Fort Wayne, Ind.
 L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

REDUCING VALVES (Gas, Air, Steam, Water)

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

REPAIRS (Gas Meters and Appliances)

Helme & McIlhenny, 1349 Cherry St., Philadelphia, Pa.
 Maryland Meter Works, Baltimore, Md.
 Superior Meter Co., Brooklyn, N. Y.
 The Western Gas Construction Co., Fort Wayne, Ind.

RETORTS

Gas Machinery Co., Cleveland, Ohio
 J. H. Gautier & Co., Jersey City, N. J.
 Harbison-Walker Refractories Co., Pittsburgh, Pa.
 Russell Engineering Co., St. Louis, Mo.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

RUST PREVENTIVE

Superior Laboratories, Grand Rapids, Mich.

SCRUBBERS

Camden Iron Works, Camden, N. J.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Gas Engineering Co., Ingram Ave., Trenton, N. J.
 Foundation Oven Corporation, Woolworth Building, New York, N. Y.
 Gas Machinery Co., Cleveland, Ohio
 Isbell-Porter Co., Newark, N. J.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Koppers Co., Pittsburgh, Pa.
 The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
 The Stacey Manufacturing Co., Cincinnati, Ohio
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

SELLING AGENTS

Compania de Cocinas y Calentadores, Havana, Cuba

SEPARATORS (Oil and Steam)

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York City.

SERVICE BOXES, CLAMPS, Etc.

Camden Iron Works, Camden, N. J.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Grinnell Co., Inc., Providence, R. I.
 Hays Mfg. Co., Inc., Erie, Pa.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

SOAPS (Industrial)

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

SPECIALS—CAST IRON

Camden Iron Works, Camden, N. J.

STEAM TRAPS

Plant Engineering & Equipment Co., Inc., (Cor-liss Valve) 192 Broadway, New York, N. Y.
Pratt & Cady Co., Inc., Hartford, Conn.

STILLS (Benzol, Toluol)

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
The Bartlett Hayward Co., Baltimore, Md.
The Koppers Co., Pittsburgh, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

STOVES (Confectioners, Laundry, Tailor)

A-B Stove Co., Battle Creek, Mich.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
The General Gas Appliance Co., 103 Park Ave., Brooklyn, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

STRAINERS (Gas, Air, Steam, Water)

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

STRUCTURAL STEEL WORKS (See Holders)**TANKS (Ammonia, Oil, Water)**

Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Engineering Co., Ingram Ave., Trenton, N. J.
Gas Machinery Co., Cleveland, Ohio
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOMETERS

American Meter Co., 105 W. 40th St., New York, N. Y.
Brown Instrument Co., Philadelphia, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Gas Instrument Co., Ingram Ave., Trenton, N. J.
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.

THERMOSTATS

Brown Instrument Co., Philadelphia, Pa.
Gas Machinery Co., Cleveland, Ohio
Kiddle & Co., 169 Chambers St., New York, N. Y.
Minneapolis Heat Regulator Co., Minneapolis, Minn.
B. Ryan & Co., 60 E. 10th St., New York, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio

THERMO VALVES

Brown Instrument Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Robertshaw Mfg. Co., Youngwood, Pa.

THORIUM

Welbach Co., Gloucester, N. J.

TRENCH WORK

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

TURBINE (Steam)

L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES

Claus Automatic Gas Cock Co., Milwaukee, Wis.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Grinnell Co., Inc., Providence, R. I.
Isbell-Porter Co., Newark, N. J.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Pratt & Cady Co., Inc., Hartford, Conn.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Manufacturing Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

VALVES (Needle Valves for Gas Stoves)

The Roberts Brass Mfg. Co., Detroit, Mich.

VARNISHES (Insulating and Compounds)

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

WATER HEATERS

A-B Stove Co., Battle Creek, Mich.
Bartlett & Co., Inc., Philadelphia, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Abram Cox Stove Co., Philadelphia, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Dayton Mfg. Co., Dayton, Ohio
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Humphrey Co. Div., Kalamazoo, Mich.
Kiddle & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
The Kompak Company, New Brunswick, N. J.
New Process Stove Co. Div., Cleveland, Ohio.
Peninsular Stove Co., Detroit, Mich.
Philadelphia Stove Co., Philadelphia, Pa.
Pittsburgh Water Heater Co., Pittsburgh, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Reliable Stove Co. Div., Cleveland, Ohio
Rund Mfg. Co., Pittsburgh, Pa.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Heater Co., Cleveland, Ohio
The Hoffman Heater Co., Lorain, Ohio
The Lovokin Water Heater Co., 39 Laurel St., Philadelphia, Pa.
The Michigan Stove Co., Detroit, Mich.

WATER STILLS (Gas Heated)

The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
Young Bros. Co., Detroit, Mich.

WELDED STEEL PIPE

The Bartlett Hayward Co., Baltimore, Md.
Steere Engineering Co., Detroit, Mich.

WOOD PRESERVATIVES

The Sherwin-Williams Co., Cleveland, O., New York, N. Y.

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AMERICAN GAS ASSOCIATION, INC.

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